The RUBBER AGE

The Only Twice - a - Month Rubber Publication

VOL. XVII. APRIL 25, 1925 No. 2

ISSUE PRELIMINARY STATISTICS IN SECOND SURVEY OF DEALERS' STOCKS

Stocks of 1,471,907 Tires Shown, as of April 1; of Which 135,366 are Balloons—2,448,064 Inner Tubes and 31,784 Solid and Cushion Tires Reported

Marking a continuation of its program of compiling information about the domestic distribution of important commodities, the Department of Commerce is now making its second semi-annual survey of the stocks of automobile tires and inner tubes held by dealers in the United States. The *preliminary* statistics for April 1 compiled by the Rubber Division of the Department are now available in fairly complete form, and may be compared with the previous official compilation as of Oct. 1, 1924, as follows:

	Dealers' Stocks of Automobile Tires					
	April 1, 1925			Oct. 1, 1925		
	Number Reporting	Dealers Reporting	Average per dealer	Number Reporting	Dealers Reporting	Average per dealer
Total casings	1,471,907	24,286	60.6	1,402,879	26,161	53.6
Balloon casings	135,366	8,305	16.3	104,895	7,237	14.5
Inner tubes	2,448,064	24,227	101.0	2,197,553	27.480	79.9
Solid and cushion tires	31,984	1.691	18.9	**30,538	**1,449	**21.1

Note—**Solid tires only.

The following analysis of the 24,286 reports thus far received from dealers with stocks of automobile casings shows that a larger percentage of dealers reported stocks in April, 1925, than in October, 1924.

Number of Dealers According to Volume of Stock

	Per cent of Total Dealers Reporting	
	April 1, 1925	Oct. 1, 1924
Less than 10 casings	18.04	23.19
From 10 to 25 "	28.29	32.11
" 26 to 50 "	23.43	22.65
" 51 to 100 "	17.41	13.70
" 101 to 200 "	8.41	5.49
" 201 to 300 "	2.14	1.44
" 301 to 400 "	0.85	0.52
" 401 to 1000 "	1.04	0.64
Above 1000	0.39	0.26
	100.00	100.00

*This statement has been compiled at the request of the Rubber Association of America, Inc.

The two percentage columns are not exactly comparable owing to the fact that balloon tires were not included in the Oct. 1 compilation. That omission, however, would not cause a variation of more than 2 per cent in the number of dealers reporting less than 51 casings in October and the decreased number of reports from small dealers in April is therefore apparent.

Representative rubber trade experts have stated that the increase in average stock per dealer in April as compared with October is a reflection of the natural seasonal trend of the trade in connection with the effect of the spring dating system. Dealers would normally carry heavier stocks on April 1 than on Oct. 1.

An unofficial compilation as of April 1, 1924, not made by this Department, showed stocks of 1,648,993 automobile

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Daum Returns from Tour

Conditions in the distributing end of the vacuum cup tire business are in more prosperous shape than during the same period of 1924, according to George W. Daum, vice president and general manager of the Pennsylvania Rubber Co. of America, Inc., Jeanette, Pa., who has just returned from a four weeks trip on the Pacific Coast and through the Northwest.

The unusual weather experienced during the late winter months, Mr. Daum found resulted in an early movement of stocks.

Intercontinental Statement

The Intercontinental Rubber Co., the original parent company, for the year ended Dec. 31, 1924, reports net loss of $3,693 after expenses, tax and interest, compared with net loss of $12,027 in 1923. Intercontinental Rubber Products Corp. and subsidiaries report net profit of $91,698 after expenses, tax and interest, compared with $58,515 in 1923.

To Export Rubber Goods

Don. E. Chapin & Co., 42 Broadway, New York City, have recently reorganized their export department by going into partnership with Lawrence A. Latour, who for the past 10 years was New York Export Representative for the Firestone Tire & Rubber Co. The new firm will promote export sales of the Deco Rubber Products which consist of tires, rubberized aprons, drug sundries, hydrometers, rubber novelties, etc. The main office and warehouse of the Chapin company is at Northport, N. Y.

Union to Resume

Announcement is made that the Union Rubber Co. at Zelienople, Pa., will resume operations April 1st, under new management—the former management having retired. The plant will be under the management of J. T. Budinger, formerly associated with the Dunlop Tire & Rubber Co., Buffalo, New York.

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ISSUE STATISTICS IN SECOND TIRE SURVEY

(Continued from Page 39)

casings on hand held by 17,797 dealers, an average of 92.6 casings per dealer, as compared to 60.6 casings per dealer on April 1, 1925. The April figure may be changed by later returns. The consensus of opinion of representative rubber trade experts is that there are about 100,000 tire dealers in the United States.

The existence of larger present stocks in the hands of manufacturers than in April, 1924, must be considered in connection with the decreased stocks in the hands of dealers. The following statistics were prepared from reports of manufacturers by the Rubber Association of America, Inc., which estimates the statistics to represent 75 per cent of the tire manufacturing industry.

Manufacturers Stocks of Tires

	Automobile casings	Inner tubes
March 31, 1924	5,763,084	8,157,704
Sept. 30, 1924	4,524,405	6,038,868
Feb. 28, 1925	6,696,358	9,767,053

Note—*February 1925, is the latest month for which this data is available.

On the basis that these figures are representative of 75 per cent of the industry, manufacturers stocks on Feb. 28, 1925, were about 1,244,000 casings and 2,145,000 inner tubes larger than on March 31, 1924.

The above totals of April 1 are preliminary and subject to revision. Reports are still being received, and a complete and detailed summary will shortly be issued by the Rubber Division tabulating the returns by states.

E. G. Holt
Assistant Chief, Rubber Division.

London Stocks Very Low

Daily the statistical position in rubber continues to gain in strength. The latest appreciation in values has afforded producers the opportunity of marketing produce at the best prices reached since the introduction of restriction. Earlier in the year the spot price fluctuated around 1s. 8d. (40 cents), but in the latest upward movement 1s. 9d. (42 cents) has been paid for rubber at hand and near delivery. People whose information is generally reliable say they would not be surprised to see rubber at 2s. (48 cents) per pound before long.

Landings in London are still of a limited character and fresh arrivals fall far short of the quantities required for delivery, the balances having to be satisfied by a further drain upon stocks. Only 18,000 tons are now left in London as against 60,000 tons a year ago. In prewar days 18,000 tons would have been deemed far below the safety limit. The continuous diminution of the remaining reserve has aroused some nervousness as to the filling of future trade requirements or the squaring up of contract commitments on the speculative side. The question now is how long can this drain continue before exhausting that portion of the remaining stock left free for export?

Under restriction no greater addition to supplies in any quarter than 10 per cent can be secured, whether the average price in the preceding three months proves to be 1s. 6d. or a higher figure. It is computed that the present rate of consumption is practically equal to 75 to 80 per cent of standard production, and there seems little doubt that the exportable quota will be raised to 65 per cent in May. If the expected average of 1s. 6d. is realized over the year, by the close of 1925 producers will be working on 85 per cent of standard production, which would ensure them of a better return than has hitherto been achieved under restriction and carry them a step further toward the ultimate goal of the marketing of full production.

It is interesting to note the views of Sanderson & Co., the London rubber brokers, on the present situation and outlook. This concern, which can never be accused of undue pessimism, says that though it might be thought that the steady improvement in the position should serve as rare and refreshing fruit to the market, it is obvious that the public finds the diet monotonous and not sufficiently nourishing for permanence. It is clear, adds the concern, that something more startling is required to overcome the tendency to apathy, for "it is difficult to believe that prices can for long resist the relentless logic of declining stocks with all that it implies."

As stated, prices are now slightly higher than they have previously been since restriction was introduced, and apparently the only reason why consumers refuse to be stampeded into paying still higher figures lies in the fact that supplies can be increased within a short time, so that if any real shortage occurred it would only be temporary. Certainly a shortage seems probable and, however temporary, it is not pleasant to contemplate.

TIRE PRICE RISE NOT LIKELY

Officials of several Akron rubber companies recently characterized the talk of increased tire prices as "just rumors." Although admitting that the industry faces economic problems, with the price of crude rubber increased over 100 per cent in a year, officials of the larger companies do not expect any immediate increase in tire prices.

Union Charges Infringement

In a recent notice of infringement of patents, the Union Rubber Co., Zenienople, Pa., through their attorneys, state that as owners of patents No. 1,377,133 and No. 1,346,483, they have received evidence tending to show that vulcanizing equipment amounting to infringements, are being produced and sold to tire manufacturers by parties who have no license under said patents.

The company, and its one licensee, the Utility Manufacturing Co., Cudahy, Wisc., are the only concerns authorized to sell or manufacture steam cavitied vulcanizers designed to receive tire molds and all steam backs to which tire molds may be attached or fastened.

SMITHSONIAN INSTITUTE SHOWS RUBBER EXHIBIT

The entire exhibit shown by the Rubber Association of America at the International Rubber Exposition in Brussels last year has just been received and will shortly be installed on the South Gallery of the Arts and Industries Building of the Smithsonion Institution, Washington, D. C. An attractive feature of the exhibit is the collection of 12 large paintings illustrative of important applications of rubber.

Columbia Centralizes Output

Deciding to centralize their effort at one point and quickly realizing that the Mansfield plant was by far the more important, officials of the Columbia Tire & Rubber Co. have just completed the sale of the plant at Columbiana, Ohio.

Two mills and an equal number of vulcanizers have been retained and are to be shipped to the Mansfield plant where they will be put into immediate operation.

When the new equipment is installed and ready for use production of tires will be increased from 1,500 to 2,000 daily and of tubes from 2,000 to 3,000 or an increase of practically 25 per cent.

To Form Pine Institute

In order to bring into a permanent organization owners of cut-over lands, producers of gum rosin and turpentine, and factors handling these products, brokers, dealers and exporters thereof. manufacturers and distributors of wood tar products and the manufacturers of wood rosin and wood turpentine, the first Naval Stores and Cut Over Land Conference in session Feb. 20 to 22, 1924 at Savannah, Ga., appointed a committee of twelve representative men from the industry, for the purpose of devising a plan toward this end.

The work of this Committee in the form of a report was read before and unanimously adopted by the Second Conference held in Savannah during February 1925, the recommendations being the foundation and maintenance upon scientific principles an engineering and chemical institute to serve and advance the legitimate interests of all branches of the industry, to coordinate in a legitimate way the efforts of those interested in the utilization of such lands and to promote and conduct chemical and other tests to increase the uses of products.

The institute will not be conducted for profit, but merely for service and will be managed by a Board of Trustees representing the several classes of members.

Woonsocket on Four Days

The Woonsocket Rubber Co. plant in Millville, Mass., a subsidiary of the United States Rubber Co., will run on a four days a week schedule beginning April 13 according to notices posted in the plant. The plant employs 700 persons.

RUTHERFORD ATTENDS WASHINGTON MEETINGS

To discuss matters of mutual interest to the national government and the automotive industry, W. O. Rutherford, vice-president of The B. F. Goodrich Rubber Co., Akron, Ohio was recently in Washington for a series of meetings with Government officials.

Mr. Rutherford attends these conferences as a member of the Contact Committee of the Automotive Industry. Topics, pertinent to the cooperation of the government and the automotive industry, he stated, were reviewed.

He had just returned from a tour of the Western states, where he held regional gatherings of managers and salesmen of the Goodrich branch centers. For that reason he was well fortified to give a first hand report on problems and conditions of the country.

President Coolidge received those attending the conference in the executives' offices at the White House. Afterwards they were tendered a luncheon by J. Walter Drake, Assistant Secretary of Commerce, with Secretary of Agriculture Jardine and Secretary of Commerce Hoover as guests of honor.

The first scheduled conference took place with president Palmer and vice-president Keene of The Emergency Fleet Corporation. Ways and means of overcoming some of the problems presented in exporting were taken up.

One of the most important conferences for the officials of the motor industry, took place with Secretary Mellon of the Treasury. Questions of motor taxation, which represent a paramount issue in the industry, were formally discussed with a view toward adoption of plans that will enable a better distribution of levies and help in the improvement of the industry's economic situation.

Closer cooperation between the heads of industries and Government Officials has resulted in many benefits to everybody concerned, Mr. Rutherford declared.

"In one case," he said, "the cooperation between the Rubber Association, and The United States Department of Commerce has helped greatly to avoid periods of curtailment in the tire industry. Through the resulting ability of the industry to maintain a uniform production a program of marked economic benefit has bettered conditions in the trade to such an extent that the public has gained many material advantages in the way of tire quality and price."

"The Department of Commerce is at present engaged in making a survey of tire stocks in dealers' hands. On the basis of this information the manufacturers and dealers can gauge the possible tire consumption within the next few months, and the danger of over-production in the industry is thus avoided."

Sunrise Sales Formed

Sunrise Sales Company, Inc., New York City has been chartered at Albany with a capital of 100 shares preferred stock $100 par value and 100 shares common stock non par value to manufacture tires, etc. F. C. Cocheu, J. F. Bouker and E. H. Rippe, 26 Cortlandt St., New York City are the directors and subscribers. H. C. Littick, 170 Broadway is attorney for the corporation.

College Men in Industry

The results of a series of studies of the relation of college education to the industries, made by the research staff of the National Industrial Conference Board, 247 Park Ave., New York City, reveals the fact that in the rubber industry 43.9% of the higher executive posts are held by college graduates. Of the higher executives 22% are technically trained men and 21.7% have a general academic or business course training.

BANNER RUBBER BEGINS MANUFACTURE OF SOLES

The Banner Rubber Co., has opened a factory at 3553 Wazee St., Denver, Col., for the manufacture of all kinds of rubber materials. It is now turning out several gross of shoe soles daily as well as rubber heels, several kinds of floor covering, stair treads, car step pads and automobile door linings.

The output will be greatly increased with the opening of the heavy-duty mill which will be started as soon as a large motor arrives from the east, officers said.

Officers of the company are Hans Christensen, president; F. H. Morse, vice president, and Webb Waldron, secretary and treasurer.

BUFFALO

THE UNIVERSAL TIRE RECLAIM FOR ALL PURPOSES

Known wherever rubber is used

TREAD COMPOUND

Smoked Sheets	42	lbs.
BUFFALO	28	"
Glue	4	"
Mineral Rubber	4	"
Ethylidine Aniline	1½	"
Carbon Black	15	"
Petrolatum	1	"
Sulphur	2½	"
Zinc Oxide	2	"
Total	100	lbs.

Ultimate Elongation = 500 %
Ultimate Tensile Strength = 3,000 lbs.
Load at 300 % Elongation = 1,300 lbs.
Non-Blooming -- Hardness, 65 -- S.G., 1.17

U. S. RUBBER RECLAIMING CO., Inc.

100 E. 42nd. St., N. Y. Factories: Buffalo, N. Y.

"42 Years Serving the Industry Solely as Reclaimers."

CONTROL OF HEWITT RUBBER BOUGHT BY J. H. KELLY AND F. V. SPRINGER

J. H. Kelly, formerly Vice-President and General Manager Becomes President and F. V. Springer Becomes Vice-President and General Manager of Sales

The Hewitt Rubber Company, Buffalo, N. Y., has been sold. The controlling interest has passed to J. H. Kelly and F. V. Springer who have been identified

J. H. Kelly

in managerial capacities with the Hewitt organization since 1917.

Control was bought from the estate of the late H. H. Hewitt through Walter Platt Cooke and the Marine Trust Company, executors, and the sale was confirmed on April 13 by Judge Louis B. Hart in surrogate's court, Buffalo. The purchase price was not made public. The Hewitt company is capitalized at $2,000,000, half of which is preferred stock and the balance common stock.

Mr. Kelly, who has been vice-president and general manager, becomes president. Mr. Springer is vice-president and general manager of sales.

As soon as Judge Hart had confirmed the sale, Mr. Kelly and Mr. Springer announced that a vigorous expansion program would be instituted immediately. While the details of this program have not been made public, it has been in process of development for several months and involves an aggressive sales and advertising policy expected to develop a much wider distribution of Hewitt tires and other products. Preparations are being made to considerably increase production at the Hewitt plant.

The Hewitt Rubber Company was founded in 1908 by the late H. H. Hewitt, chiefly for the manufacture of air brake hose. The variety of its mechanical products increased until at the present time it manufactures a wide variety of rubber hose for all purposes and numbers among its customers eighty per cent of the trunk line railroads in the United States.

It also manufactures a large quantity of cotton-jacketed hose for the use of fire departments, rubber and asbestos packing, rubber tiling, car matting, gaskets, bumpers and molded goods, as well as special service conveyor belting, transmission belting and others.

Besides railroads, Hewitt customers include in the mechanical goods line the United States Navy and other government departments, steamship companies, steel companies, mining industries, automobile manufacturers, construction contractors, oil and gas field operators and other branches of industry.

During the war practically the entire capacity of the Hewitt plant was devoted to the production of war materials.

Practically the entire personnel of the organization from Mr. Kelly down, has been identified with the Hewitt company and the rubber industry for many years.

Mr. Kelly began his experience with the B. F. Goodrich Company in 1898 and in 1903 went with the Republic Rubber Company of Youngstown, Ohio, with which company in 1912 he was made vice-president, director and a member of the factory executive committee in entire charge of sales. In 1917 he became vice-president and general manager of the Hewitt Rubber Company. He is a member of the executive committee of both the Tire and Mechanical Divisions of the Rubber Association of America and vice-president of the Buffalo Chamber of Commerce.

Mr. Springer became connected with the rubber industry in 1905 when he took charge of eastern railroad sales for the

F. V. Springer

Republic Rubber Company. Later, he became general manager of railroad and export sales. In 1917, he became vice-president and general manager of sales for the Hewitt Rubber Company.

The balance of the executive personnel

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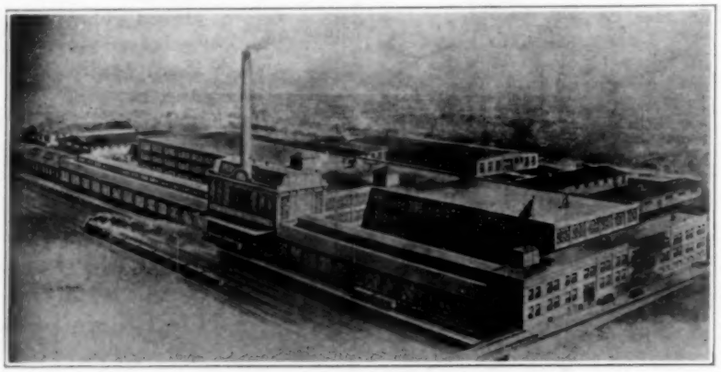

The Factory of the Hewitt Rubber Co.

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*

SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER

Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.

LIBERAL WORKING SAMPLE FURNISHED FREE

AKRON MANUFACTURED 8,000,000 TIRES IN FIRST QUARTER OF 1925

Daily Production Now Approximately 120,000 Tires a Day, Highest Level Since the Post War Boom—Increased Production of Heavy Duty Pneumatics and Solids

Business volume of rubber companies in the Akron district showed an average increase of more than 20 per cent during the first quarter of 1925, compared with the same period last year. Predictions made last fall of a larger demand for automobile tires have been fully realized, and manufacturers are confident that these conditions will continue all during the year. Some companies report difficulties in keeping production up to shipments and have already taken steps to increase their output.

Fabric brokers report that purchases of tire yarn and all grades of fabric have increased in line with larger output of tires. An encouraging sign, it is stated, is that manufacturers are getting away to some extent from the "hand-to-mouth" purchasing policy practiced in recent years, and are placing larger orders with the cotton goods representatives for future delivery.

54,000,000 *Tires in* 1925

More than 8,000,000 tires and 10,000,000 tubes were turned out in the district during the first quarter of the year, it is estimated. The total tire production during 1925 is placed at 54,000,000. Daily tire production here now approximates 120,000 tires a day, the highest level reached since the post war boom. Most of the rubber companies are operating at or near capacity.

The greatest gain has been made in the production of heavy duty pneumatic bus and truck tires. Great additional expansion in the use of pneumatic tires for commercial vehicles is looked for, with a permanent and steady market as a satisfying feature of the trend.

There has been a general awakening this year to the potentialities which expansion of bus use has in store for the tire industry. Many rubber manufacturers have pioneered in perfecting and marketing pneumatic tires for bus and truck use. The balloon tire, which has been accepted so readily for automobiles, is beginning to be used also for buses.

Tire makers in this territory obtained more than their share of the 1924 bus business. Practically every company reported not only increased sales, but better percentages of profits over 1923. About 55,000 buses were in operation last year and this number is expected to be increased to 70,000 this year.

Simplification to Help Industry

The entire tire industry undoubtedly will be benefited by the move of the Government in undertaking simplification and standardization of tire sizes. Confusion exists in the tire merchandising field due to the many tire sizes existing, and numerous petitions have been made to the manufacturers to clarify the situation by standardizing upon a certain number of sizes.

The B. F. Goodrich Co. let a contract recently for construction of its new boot and shoe warehouse on South Main street, to cost approximately $1,500,000. This is the largest building project announced in the rubber industry for several years. The Goodrich building will be six stories high and contain 550,000 square feet of floor space.

The warehouse will enable the boot and shoe department of the company to keep on hand ample lines of stocks throughout the year, thus benefitting the company, employes and dealers alike. Rented warehouses in New York and Chicago will be eliminated, thus further centralizing in Akron the boot and shoe industry, as well as the tire industry.

DUNLOP BUYS RIGHTS OF DE MATTIA PATENTS

The Dunlop Rubber Co., Ltd., Fort Dunlop, Birmingham, England, has purchased from De Mattia Bros., Inc., Garfield, N. J., exclusive rights to De Mattia patents in France and England. The patents cover automobile tire cores and chucks. The English rights do not include Canada and Australia as the Bawden Machine Co., Toronto, Canada, are exclusive licensees for Canada, and the Australian rights were purchased in 1923 by the Dunlop Rubber Co., of Australasia, Ltd. De Mattia Bros., Inc. will still serve the foreign trade on tire molds and accessory equipment for the manufacture of pneumatic, cushion and solid tires.

Goodrich to Retire Stock

The B. F. Goodrich Co., Akron, Ohio, notified the New York Stock Exchange recently of its intention to reduce its outstanding preferred stock by 23,760 shares. This would lower the outstanding shares of 7 per cent cumulative preferred from the present 448,480 shares to 424,720 shares. In dollars and cents it would mean the striking off of $2,376,000 of outstanding preferred.

While no announcement has been made as to the means of retiring this amount, it was assumed that it would be done through purchase of the stock in the open market. Probably the company now has that number of shares in its treasury, as the stock was selling around $95 a share recently. To retire the stock through call the company would be obliged to pay $125 a share, the saving through open market purchases being around $30 a share.

Rubber Process Patented

Herbert A. Winkelmann, inventor of a process for renewing rubber recently granted U. S. Patent No. 1,532,213, has assigned the patent to the B. F. Goodrich Co., Akron, Ohio. The process for renewing the plastic properties of vulcanized rubber consists in incorporating with the rubber a condensation product of an aldehyde and an aromatic amine.

STOCKS

Niles, O.
Akron
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Cincinnati
Toledo
Indianapolis
St. Louis
Omaha
Dallas

Use More Zinc Oxide
Be Sure It Bears This Label

AZO ZINC OXIDES

AMERICAN ZINC SALES CO.
DISTRIBUTORS FOR
AMERICAN ZINC, LEAD & SMELTING CO.

STOCKS

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Philadelphia
Boston
Trenton
Montreal
Chicago
Louisville
San Francisco
Los Angeles
New Orleans

GOODRICH SENDS FIRST AD BY TELEPHOTOGRAPHY

The first advertisement ever transmitted by telephotography, the new method of sending photographs by telegraph, was printed in the *New York Times* April 7 for the B. F. Goodrich Rubber Co. of Akron, Ohio.

The entire advertisement, including an illustration, was sent over the wires of the American Telephone and Telegraph Company, which hitherto has used the method only for the transmission of news photographs. It was filed at the transmitting company's Chicago office at 1 o'clock by the William H. Rankin Co., advertising agents, and the complete print and negative were received by *The Times* an hour and a half later.

The success of the operation shows that advertisements prepared one day can be printed the next day in a distant part of the country exactly as the advertisers want them to appear, and enables merchants and manufacturers to take prompt advantage of marketing opportunities. The American Telephone and Telegraph Company is prepared to give telephotographic service between San Francisco, New York and Chicago.

Silvertown Balloons
possess the Balloon Cord's extra margin of smooth riding comfort combined with the Silvertown dependability and endurance
Goodrich

The Ad Sent by Telephotography

Master Rubber Formed

The Master Rubber Co., Huntington, N. Y., was recently incorporated with an authorized capital of $25,000 by W. C. Ross, M. E. Howlett and J. W. Winkler.

Registers "Cambridge"

Edward G. Hefter, doing business as the Cambridge Tire & Rubber Co., St. Louis, Mo., recently registered in the U. S. Patent Office under No. 197,124 the trade-mark "Cambridge" which is being used on inner tubes, tube-repair kits and blow-out patches. This registration is not subject to opposition.

HEWITT RUBBER BOUGHT BY FORMER OFFICIALS

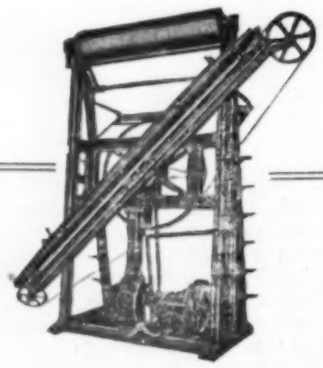
(Continued from Page 42)

includes J. M. Cranz, assistant general manager in charge of factory operations, and a member of the Specification Committee of the Rubber Association of America; E. K. Twombly, assistant general sales manager and a member of the organization for nearly ten years; John F. Palmer, consulting engineer and inventor and patentee of the cord tire; E. J. Clare, advertising manager and formerly advertising manager of the Wire Wheel Corporation of America; O. E. Kruger, general superintendent of the mechanical division; C. H. Paeplow, mechanical and plant engineer; Charles Ellis as chief chemist; and J. B. Bennett in charge of experimental activities.

The Hewitt plant is located on the New York Central belt line and has two spurs connecting it with the ten trunk line railroads of Buffalo. Its railroad and marine transportation facilities are unequaled in the rubber industry. It has an abundance of pure cold water for use in tire processes and the arrangement of the plant is such that it produces an unusual number of tires per square foot of floor space.

H. T. Dunn Returns

H. T. Dunn, president of the Fisk Rubber Co., Chicopee Falls, Mass., recently returned from a trip to Europe during which he visited most of the important cities of the Continent.



The Bolton Vertical Bias Cutter

Accuracy with Speed

Cuts Cord or Flat Woven Fabrics with equal ease and precision.

Cutting range—¼" strips to 60". Bias blocks—on any angle from the horizontal to 45 degrees.

In use in tire and rubber plants throughout the world.

SPADONE MACHINE CO., Inc.
15 Park Row New York, N. Y.

Foreign Representative
FRANCIS SHAW & CO., LTD., Bradford, Manchester, Eng.

Est. 1900 Inc. 1919

THE KUHLKE MACHINE CO.
Formerly Jones & Kuhlke

AUTOMOBILE TIRE MOLDS and CORES

GENERAL MACHINE WORK

Akron, Ohio

What is Tar?

[For answer see our advertisements in the June 25, July 25, Aug. 25, Sept. 25, Oct. 25, Nov. 25 issues of THE RUBBER AGE]. Reprints furnished on request.

We can help you find the cheapest tar exactly suited to your needs.

Send us your specifications.

PENSACOLA TAR & TURPENTINE CO.
GULL POINT, FLORIDA

The largest individual producer of distilled pine products

RUBBER FACTORIES IN CANTON DISTRICT BUSY

Rubber factories in the Canton, Ohio, district are now manufacturing approximately 500 tires a day more than a month ago and production schedules call for further increases by the first of May. The Triangle Tire & Rubber Co., according to M. C. Wyatt, general manager, is producing from 250 to 275 tires a day and will be at capacity soon. The manufacture of inner tubes will be started at this factory as soon as new equipment has been installed.

The Wilson Rubber Co. has enough orders for rubber gloves on hand to keep it running almost to capacity for the next six months, according to Fred J. Wilson, president. The Monarch Tire & Rubber Co. is turning out 350 tires a day and expects no decrease. Installation of new equipment at the factory of the Monoblock Co., Dover, has been completed and production begun. An unusually heavy demand is reported by the the Tuscan Rubber Co., Carlisle, where rubber sundries and tires are manufactured. Production at the Chester Cord Tire Corp. is in excess of 400 tires a day and it is expected that this will be increased shortly.

Fisk Absorbs Slater

The Fisk Rubber Co., Chicopee Falls, Mass., is absorbing one of its tire fabric subsidiaries, the William A. Slater Mills. The latter is reducing its capital to ten shares of no par value by cancelling $150,000 par Class "B" stock exchanged for the no par stock; cancellation of $30,000 Class "A" stock purchased by the company, and cancellation of $1,600,000 preferred stock which Fisk Rubber Co. owns and which it will turn over to the Slater company on transfer to the Fisk company of real estate and tangible assets.

NAVY TO BUY RUBBER PRODUCTS

The Bureau of Supplies and Accounts of the Navy Department, Washington, D. C., will shortly go into the market to buy the following items: 8,000 doz. buttons, rubber, anchor, 55-ligne, 67,000 combs, 1,200 prs. rubber boots, size 9, 8,000 prs. overshoes, 8,200 prs. gymnasium shoes. Bidding blanks and specifications will be distributed to interested manufacturers by the Bureau of Supplies and Accounts.

Regal Changes Name

The Regal Rubber Co., Dayton, Ohio, by a certificate from the Secretary of State, has changed its name to the Serton Rubber Co. The rubber soles manufactured by this company will be known as Sert-On rubber soles.

PRODUCTION OF TIRES DECLINED IN FEBRUARY

According to the latest statistics just issued by the Rubber Association of America production of high pressure tires declined slightly in February. Production of high pressure cords in February was 1,996,488, inventory 4,108,082 and shipments, 1,458,136 compared with production in January of 1,999,410, inventory of 3,562,701 and shipments of 1,618,169. Production of balloons was 740,106 in February, inventory was 877,851 and shipments were 764,874 compared with January figures of 546,146, 901,031 and 563,315 respectively.

3,977,721 *Tubes Made*

Production of high pressure tubes was 3,977,721, inventory was 8,815,514 and shipments 2,989,606 in January. Production of balloon tubes was 776,855, inventory was 951,539 and shipments were 738,734. Production of high pressure fabrics in February was 944,168, inventory was 1,710,425 and shipments were 718,626. Production of solid and cushion tires was 53,058 in February, inventory was 191,733 and shipments were 55,646. 13,363,986 lb. of cotton fabric were consumed in February and 41,720,847 lb. of crude rubber. Production of passenger cars showed an increase in February, 252,785 cars being manufactured in that month, compared with 212,908 in January.

DIPHENYL-GUANIDINE

Diphenyl Guanidine was developed to supply an unsatisfied demand. When placed on the market it was alone in its field. It is still alone through its superior characteristics.

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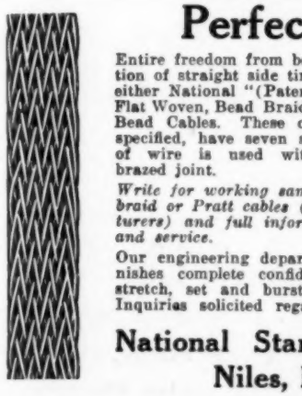

Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt cables (no charge to tire manufacturers) and full information as to our products and service.

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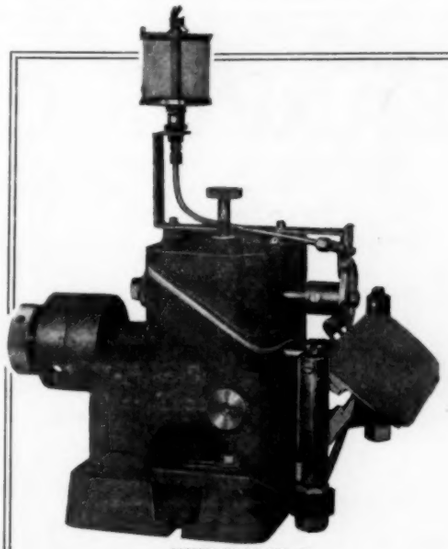
National Standard Company
Niles, Michigan



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DELIVER LARGEST PRODUCTION
At lowest maintenance cost.

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RUBBER IMPORTATIONS INCREASED IN MARCH

Importations of crude rubber into the United States during March included 11,620 tons of plantations from Singapore, 3,317 tons from Belawan-Deli, 4,817 tons from London, 2,592 tons from Penang and 2,376 tons from Sourabaya. Total importations of plantations aggregated 31,067 tons. Imports of Africans were 287 tons, Centrals and Guayule 551 tons and Paras 1,906 tons. 186 tons of waste were imported, 25 tons of balata and 1,022 tons of miscellaneous gums.

27,185 tons came in at New York, 1,260 tons at Boston, 2,236 tons at Baltimore and 56 tons at Philadelphia. 330 tons were received at Los Angeles.

Total importations for the three months ending March 31 were 87,330 tons, compared with 71,126 imported in the same period last year.

Stedman Granted Patent

James H. Stedman, president of the Stedman Products Co., South Braintree, Mass., manufacturers of rubber flooring and tiling, has been granted U. S. Patent No. 1,531,763 on a rubber flooring material and the process for making it. The method consists in compounding crude or reclaimed rubber with pigment, mixing a plurality of such stocks of colored rubber and calendering the mass into a sheet, and then recalendering the sheet by passing it edgewise through the calender with a direction of movement at an angle to the direction of the fibre of the sheet which was developed by the mixing and first calendering. The resulting product is a varigated rubber sheet having a cross-mottled surface.

RUBBER AS A BEAUTY AID

A well-known dental specialist of London, Eng., has developed a beauty treatment by which women whose cheeks are sunken can have the soft round curves of beauty and health restored to them. His method, which is meeting with great success, is to pad the gums with special wax and rubber.

Hood Business Good

The Hood Rubber Co., Watertown, Mass., reports business exceptionally good in practically all departments. The carpet lining plant, bought by the company a few months ago, has been entirely revamped to house the rubber heel department. Improvements are being made throughout the main plant, the most important of which are three large additions which will give nearly 100,000 square feet of additional floor space.

Goodrich Branch Moved

The B. F. Goodrich Co. has moved its branch at 529 Asylum St., Hartford, Conn., to 146 Allyn St. Joseph F. Littman is manager of the branch.

CARLTON PLACES CABLE CONTRACT IN BRITAIN

(Special to THE RUBBER AGE*)*

President Newcomb Carlton of the Western Union Telegraph Co., who went to England to complete negotiations for laying a new Atlantic cable, has just returned to New York.

In an interview while in England, Mr. Carlton said that an important alteration had been made in the scheme. It was originally intended that the cable should be laid in two sections, first between Penzance and Newfoundland, and later between Newfoundland and New York. Now, however, the cable will be completed as a single job from Penzance to New York, via Newfoundland.

Mr. Carlton is understood to have awarded the contract for the cable to a British concern, the Telegraph Construction & Maintenance Co. The cable will be ready for laying in the summer of 1926. The Western Union has also signed a contract with a German cable concern, by which the German cable to the Azores will be carried on to New York.

Invent Rubber Composition

William C. Geer and Webster N. Jones, inventors of a rubber composition and a method of preserving rubber, recently granted U. S. Patent No. 1,532,398, have assigned the patent to the B. F. Goodrich Co., Akron, Ohio. The method consists in treating the rubber with 1, 8-naphthylene diamine.

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Just look over the section in this issue. You will find there all the leaders in the industry who are selling the same kind of products which you manufacture. These concerns have found out from experience that it pays in dollars and cents to have their products listed in every issue and of course they are capitalizing on their slight investment.

In the short period of seven months this section has increased from a single page to almost three pages through sheer merit. THE MARKET PLACE fills a long-felt want in the industry for a place to list all sorts of equipment and supplies in small display space.

Note that every listing, not only places the name of your product in large display type, but it also allows of a complete description with your full name and address. What other display advertising gives you as much at such a small cost?

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THE RUBBER AGE

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FUTURE TIRES WILL BE BALLOONS, SAYS HEALY

The trend toward lighter and more economical cars made it necessary to provide tires that are lighter but of sufficient size to give proper cushioning against road shocks, and the balloon tire was evolved to fill this need, says L. J. D. Healy, technical superintendent of the Fisk Rubber Co., in a paper on pneumatic tire elements and developments published in the April issue of *The Journal of the Society of Automotive Engineers.*

The tire of the future probably will be developed along the lines of the balloon tire, he predicts. It will be flexible, of generous proportions and as light as possible consistent with strength and durability, and it will be adapted to a light-weight rim. Its development will follow the trend of motor car design, which no doubt will be along the lines of reduced unsprung weight. The less weight there is below the springs the better it will be for the tires and for the occupants of the car. Removal of the brakes from the wheels to the sprung part of the chassis, together with the use of lighter axles and wheels, will allow the use of lighter and more flexible tires. The automobile, spring and tire engineers, working in unison, will no doubt some day evolve the long-looked-for comfortable, high-speed, economical, light-weight car.

A balloon tire is nothing more nor less than a light-weight cord tire that has a greater volume of air at lower pressure, says the author. It does not require so heavy a carcass to withstand the strain, fewer plies of cord are needed, a more flexible carcass can be applied, and this in turn gives a greater yielding periphery of the wheel. In consequence, vibrations and shocks are absorbed to a greater degree than by the stiffer-walled high-pressure tire.

"Balloon tires have been used on our fleet of eight test cars," says Mr. Healy, "and have given consistently good service with very little trouble from punctures and blowouts. The service is almost equivalent to that of the regular high-pressure tires. Some persons have claimed that more punctures have occurred with balloon tires, but our experience has not shown that to be the case under the road conditions of Wisconsin, northern Illinois and eastern Iowa. On the whole, balloon tires have given practically the same durability as high-pressure tires, except that the tread wear is greater, but we believe that this wear can be overcome by proper distribution of the rubber in the tread stock. The wear is greatest on the outside of the tires on the front wheels and on the inside of the tires on the rear wheels. The former is due to the pitch and toe-in of the wheels and the latter to the slope of the road surface. Although the wear on the rear tires is greater than on the front ones, the off-center wear is more pronounced on the front wheels."

The Aquaplane

Pennsylvania Leases Branch

The Pennsylvania Rubber Co., Jeanette, Pa., recently signed a five year lease on the four story brick building at 100 Third Ave., Minneapolis, Minn., where they will establish northwest distributing quarters. The property contains 18,000 square feet and is served by trackage at the rear of the building.

"Unicord" Registered

The Textile Development Corp., New York, N. Y., recently registered in the U. S. Patent Office under Ser. No. 191,102 the trade-mark "Unicord" for woven cord fabrics for use in the manufacture of tires and fabric belting.

RUBBER NOVELTIES SEEN AT LONDON SPORTS SHOW

(Special to THE RUBBER AGE*)*

Far greater interest than usual attached to London's Marine and Small Craft Exhibition this year, for the reason that it was held in conjunction with the first Holidays, Sports and Pastimes Exhibition ever organized in Great Britain. Rubber goods have always been a prominent feature of the marine exhibition, and, bearing in mind their importance in the sports world, it can be readily realized that they were doubly prominent at this combined exposition.

A very interesting exhibit was that of Slazengers, which consisted of a huge showcase of articles illustrating all the stages in the manufacture of a tennis ball from the fine, raw Para rubber to the finished article. According to this display, some 25 distinct processes are necessary to produce a Slazenger ball.

Probably the most outstanding novelty on view was the aquaplane, a safety bathing yacht in the form of a collapsible skeleton boat, supported on three balloons of heavy rubber.

The boat is carried in a bag (its complete weight being about 20 lb.), taken down to the sea, put together in a few moments, the balloons inflated by mouth or by pump, and (if required) a tripod mast is fitted carrying 16 square feet of sail. The aquaplane will comfortably carry two or three passengers.

The two front floats of the craft are blown up to about 58 inches. A sun canopy is easily attachable, the whole device has no loose nuts or bolts, and cannot be wrongly assembled. It was exhibited by the Bathing Yacht Manufacturing Co., Ltd., of London.

"Maxi-Cushion" Registered

The Firestone Tire & Rubber Co., Akron, recently registered in the U. S. Patent Office under Ser. No. 175,011, the trade-mark "Maxi-Cushion" which it claims has been used on tires since October, 1922.

Kleinert Registers "Jiffy"

The I. B. Kleinert Rubber Co., New York, recently registered in the U. S. Patent Office under Ser. No. 207,745, the trade-mark "Jiffy" which has been used on sanitary bloomers since March, 1922.

NEW ENGLAND SOUTHERN MILLS

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MORE CAPITAL NEEDED UNDER STEVENSON PLAN

(Special to THE RUBBER AGE*)*

Restriction has produced a curious situation in the rubber industry. By curtailing the output of British producers nearly 50 per cent it has raised working costs per pound to a relatively high level. Some concerns are trying to remedy this state of affairs by acquiring additional estates, with the object of getting a larger output and lower overhead charges. There is little doubt that when restriction is lifted the full advantage of working larger units by one management will be secured. But as fresh capital has to be raised in order to purchase the additional areas it follows that little, if any, advantage can be secured so long as restriction remains in force. Thus the paradoxical situation has arisen that a concern producing at only 60 per cent of capacity is compelled to expand its capital in order to offset the inevitable effects of restriction upon working costs.

The Sendayan (F.M.S.) Rubber Co. is a case in point. The heavy falling off in its output during the past two years shows that it has been more seriously affected by restriction than many other producers. Its 1923-24 crop was nearly 30 per cent less than that of 1921-22, and as a consequence fixed and overhead charges fell heavily on the company. It was decided last year, therefore, to seek relief by acquiring additional areas in the vicinity of the existing property which could be conveniently supervised from the present estate headquarters, and with that object the capital was increased from £75,000 ($375,000) to £125,000 ($625,000). As it was not possible to secure such areas, it is now proposed to purchase a property separate from the existing estate and large enough to form an economic unit. The new area is estimated to cover 3,746 acres,, including 3,026 acres already under rubber. Standard production is approximately 500,000 lbs., but is under appeal, and it is anticipated that a substantial increase will be allowed.

The acquisition, including the provision of working capital, will, it is estimated, necessitate the issue of 130,000 £1 ($5.00) shares, and therefore a further increase in capital to £220,000 ($1,100,000) is proposed. Even with the present standard production, the board believes the purchase will result in economies on estate and overhead charges and the maintenance of the present ratio of profits.

Use of Substitutes Growing

Rising prices for rubber are causing consumers to evidence interest in possible substitutes, Secretary Hoover said recently. He added that public interest in substitutes for essential raw materials rose and fell with the level of prices. The recent fall in the price of sisal, Mr. Hoover said, had resulted in a falling off of interest in the development of substitutes for the commodity.

NEW DU PONT FIRM TO HANDLE EVERDUR METAL

Du Pont Everdur Co. has been organized to take over the manufacture and sale of the metal alloy known as Everdur No. 50, heretofore handled by the Du-Pont Engineering Co.

This corrosion resistant metal is a discovery made by du Pont chemists in their search for an alloy to meet the requirements of the company's many chemical activities. The use of acids and chemicals, particularly hydrochloric acid presented many problems which the metals heretofore available for the construction of plant equipment did not meet. As a result of a number of experiments a copper silicon alloy was produced which was found to be highly resistant, not only to hydrochloric acid, but to a large number of other corroding liquids. It has a tensile strength above the acid resistant bronzes, makes sound castings, is easily machined and has been found to be available for a great number of purposes. It can be fabricated into practically all forms obtainable from steel, including cold drawn seamless tubing.

It has been used extensively in a number of manufacturing operations, not only by the du Pont Co., but by many others which require corrosion resistant machinery and equipment. Its use has extended into mining operations, where the metal has been found to be highly resistant to gases and aciduous waters of the mines. It has been made into wire screening and found resistant to the ravages of seashore atmosphere.

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AND PRINCIPAL FOREIGN CITIES

WEST AFRICA TO REVIVE CULTIVATION OF RUBBER

(Special to THE RUBBER AGE*)*

A few years ago the rubber industry was believed to be dying out in British West Africa. For a considerable time it had enjoyed great prosperity, but with the advent of plantation rubber in large quantities from the Far East, the wild product of West Africa was forced to yield pride of place. West Africa, however, hopes to regain its position in the market, and with this object in view the natives are cooperating with the Government of the coast, and a chain of plantations is being established, notably in Nigeria. Signs of renewed life in the industry are already indicated by the export figures.

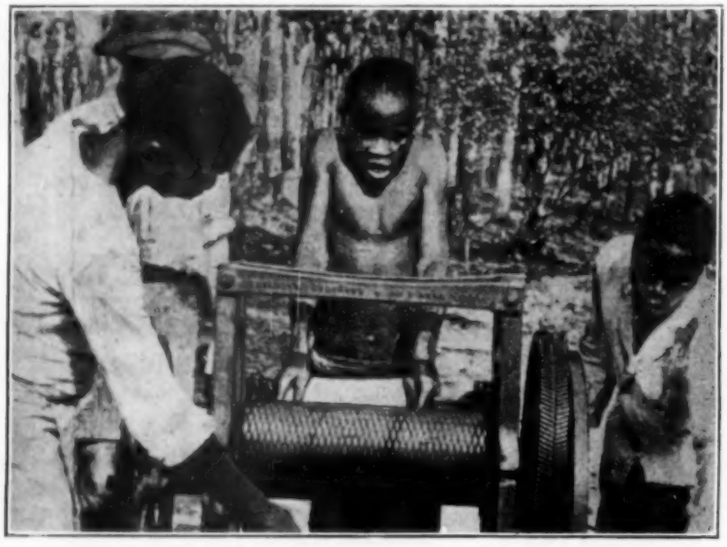
Once Did a Large Trade

At one time the Gold Coast did an immense rubber trade. It exported in 1898, 6,000,000 lb. of Funtunia elastica and Landolphia. By 1921 the export had fallen to 102,780 lb. Nigeria's export was as low as 7,248 lb. in 1913, whereas in 1906 it exported 3,434,279 lb., valued at £307,076 ($1,535,380). More recently, however, Nigeria's efforts brought up the export in 1923 to 478,408 lb., valued at £21,221 ($106,105). In this colony the Forestry Department is re-establishing the tree in places from which it had almost disappeared. It is also organizing a system of communal plantations, a system which especially appeals to the native chiefs. In 1911 over 400 new plantations were started, about 100,000 Funtunia plants being planted, as well as over 129,000 Para rubber seeds, and about 4,000 seedlings. In the drier parts of the colony Ceara plantations have been set up. At Mamu forest recently the Government plantation rubber fetched 6s. 6d. ($1.56) per lb.—only 12 cents less than the price of the best Para at the same time. At Sapele, where the inhabitants are making individual efforts, two Para rubber estates in 1915 harvested 94,413 lb. of dry rubber.

It is thought that the forest regions of Ashanti and the Gold Coast should be rich in rubber in the near future. The Ashanti chiefs, anxious to compete again with the Far East, are setting their forests in order under the supervision of Government officers who are helping in various localities. Seedlings from the botanical gardens at Kumasi, Aburi, and Tarquah have been widely distributed. Near Axim, Sekondi, and Taquah large plantations of Hevea have been made, as well as in the Kwahu district, where Hevea thrives well. One plantation near the Offin river has 90,000 Para trees, at another 8,450 trees were tapped recently and yielded 10,565 lb. of rubber. A plentiful supply of labor is available here to help in restoring the industry.

Rubber of good quality is produced in the Jolah country, Gambia. It grows on the grass lands of Fogni and the vine is tapped there by women. In Sierra Leone no plantation rubber has yet reached the commercial stage, although trials are in progress. The late chief of the Mendis, Madame Yoko, set up a plantation at Moyamba and it was well cared for until she died. At Mano, the town chieftain has also made a good plantation. Para rubber is now growing at Tinainahun, Segbwema, and Bo.

Squeezing Water from Rubber on one of the Niger Company's Plantations



Rolling Rubber on a Nigerian Plantation

Raise Fund for N. Y. Rubber

Business men of Beacon, N. Y., are endeavoring to raise $50,000 with which to partly liquidate the claims against the New York Rubber Co. which has been in the hands of receivers for over a year. The company under the management of Lester Bigelow has considerably increased its business since the receivership. About 200 persons are employed. Beacon business men have offered to raise the $50,000 in an effort to keep the factory in operation.

To Do Business in N. Y.

The India Tire & Rubber Co., Akron, Ohio, has filed a certificate in the office of the Secretary of State to enable it to do business in New York State with $250,000 capital. The New York office is at 250 W. 54th St., New York City.

U. S. Sells Buildings

The United States Rubber Co. recently sold its group of buildings at 137-141 Duane St., New York City, running through the block and including 62-66 Thomas St., on a plot 75 by 175 feet. As new quarters the company has taken a long-term lease on the ten-story building at 61 Hudson St. and occupying the entire block front on the south side of Jay St. from Hudson St. to Staple, the respective frontages being 97, 102 and 101 feet.

FIRESTONE MAY GROW RUBBER IN FLORIDA

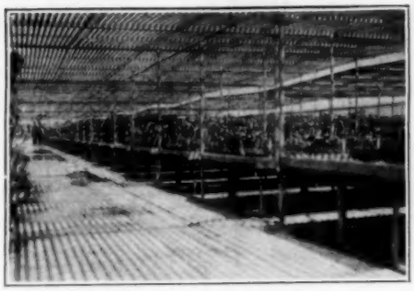
Florida may be the future source of America's crude rubber supply if the development of several different varieties of Hevea or rubber trees prove successful. H. S. Firestone has just returned to Akron after inspecting Hevea saplings on the Florida farms of Henry Ford and Thomas A. Edison and on the government experiment farm at Cocoanut Grove, Fla.

Thomas Edison is said to have made several important suggestions regarding the extraction of latex. His methods would greatly improve those used on

Edison and Firestone Examining a Rubber Sapling on Henry Ford's Estate near Latelle

plantations in the Orient as they hasten and increase the flow of latex and would materially decrease the cost of crude rubber production, according to Firestone, who for three years has been seeking a new source of supply by which America can become independent from the British and Dutch rubber plantations.

As the leader in the movement for America to grow its own rubber, Mr.



Rows of Potted Hevea Shrubs at the Experimental Station at Chapman Field

Firestone has employed expert rubber growers to make surveys for him regarding the possibility of establishing commercial rubber plantations in Mexico, Central America, the Philippines and Liberia. In the latter country on the African coast the Firestone company already operates a plantation and is preparing to plant rubber trees on an extensive scale.

Firestone declares that the price of crude rubber, which dropped to 17 cents a pound after the United States Congress appropriated $400,000 for experiments in rubber growing, has been forced up to 43 cents by the British Stevenson Restriction Act. He predicts that these restrictions will cost American automobile and truck owners between one hundred and three hundred million dollars for tires this year as every ten per cent advance in the cost of crude rubber means an assessment of about $75,000,000 against America.

Thomas A. Edison and Harvey S. Firestone Tapping a Rubber Tree on the Edison Estate

CREDITORS TO EXAMINE BUSINESS OF HODGMAN

Judge A. N. Hand, in the U. S. District Court recently granted an application made by Allen R. Memhard, counsel to the trade creditors' committee, that a man be selected to make an examination and survey of the business of the Hodgman Rubber Co., Tuckahoe, N. Y., in order that it may be determined whether the equity receivership is to be continued, or whether the business is to be liquidated. The man in question is also to endeavor to formulate some plan under which the business can be reorganized and continued, possibly through a contribution by stockholders. Judge Hand set the cost of this survey at $5,000 and fixed a time limit of 30 days.

Col. Joseph M. Hartfield, of White & Case, who said he represents a majority of the 435 stockholders holding $930,000 in first preferred stock, and an average of 27 shares each, indorsed the plan suggested by Mr. Memhard.

Conducting Business at Loss

Mr. Memhard declared that James Newton Gunn and Gordon Auchincloss, equity receivers, who were appointed on Sept. 22, 1924, have been conducting the business at a loss. He said that a report as of Jan. 1 indicated current quick assets of $710,000, whereas by March 1 this had been reduced to $575,000.

It was brought out that the company owes four bank creditors $600,000, and merchandise creditors $300,000, and that Cox Bros. have an unliquidated claim for damages against the estate for $550,000 for rubberizing corset silk. This last claim, however, Colonel Hartfield said, he believed could be successfully contested before Special Master Edward Childs.

Mr. Memhard brought out that his suggestion as to the survey was not advanced, nor the hearing called, at the instigation of the stockholders, but was done entirely on the initiative of the merchandise creditors' committee, for which he is counsel.

It was stated that it is hoped to get a new head for the Hodgman concern, and that he is to be invited to lead the proposed reorganized company on the facts developed by the survey.

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RUBBER INDUSTRY WILL BE WELL REPRESENTED AT CHEMICAL SHOW

Exhibits to Include Raw Materials, Vulcanizing Processes, Aging, Compounding Ingredients, Accelerators, Machinery in Operation and Array of Finished Rubber Products

The prominent places which the rubber industry occupies in the great family of chemically controlled industries will be made evident at the Tenth Exposition of Chemical Industries to be held during the week of Sept. 28-Oct. 3, 1925, at the Grand Central Palace, New York City. Elaborate plans are now in active preparation to cover the latest developments in the various phases of the industry from the raw materials to the finished products.

The managers, in co-operation with the Advisory Committee of the Exposition and the exhibitors will make special efforts to display and demonstrate to the best advantage the particular novel characteristics, uses, and selling points of all the products exhibited, to emphasize the role of the Exposition as an illustrated up-to-date synopsis of all the progressive activities in the industry taken as an entity, and to bring out its effective function as the best medium for creating and cultivating educational and economic intimate contacts between producers and consumers.

New Theories to be Demonstrated

Three entire floors of the vast Grand Central Palace will house the great variety of exhibits. Many of the leading manufacturers of chemicals, mechanical appliances used in the industry, and of the finished products have already reserved space where to exhibit their wares for the inspection of the consumers. Beginning with a display of the raw materials, where valuable information could be gathered of the composition of rubber latex and properties of crude rubber, the visitors, manufacturers, consumers, students, as well as those who want to be shown, will be afforded the best opportunity to see and learn what the present status of the industry can offer about the function of chemistry and chemical engineering in vulcanizing processes, aging, compounding ingredients, types of accelerators and their effects, and the many other chemical features of the industry, down to the complete series of machinery used for the mechanical operations involved—a number of which will be in actual operation —and an array of finished rubber products.

Three Floors of Exhibits

New ideas about the theory and equipment in the fundamentals of chemical unit processes, which are of prime importance to all industries, such as grinding, pulverizing, mechanical separation, evaporation, drying, waste recovery, and the like, will be particularly featured; interest in Industrial Hygiene and Safety Engineering will be aroused by a series of representative exhibits; automatic appliances for controlling and recording the various operation stages, as well as their importance for improving production and lower costs will be prominently exhibited; in fact, all that contributes to efficiency in manufacturing will be given the deserved attention.

Scope of the Exposition

But the scope of the Exposition will not be merely a show-room of purely engineering features. Educational and economic factors as well will be featured this time and to a far greater extent than in the previous nine expositions. The educational activities will be crystallized in technical society meetings, where papers will be presented by men eminently fit to tell about the latest known progress in the theory and practice of the respective fields; industrial motion pictures will show the actual operation of plants in all the phases of the industries they illustrate; even the individual meetings between exhibitors or their representatives and visitors interested in their exhibits will contribute a large share to the educational function of the Exposition. The student courses which had such beneficient results during the Ninth Exposition will be again featured under the direction of Prof. W. T. Read of Yale University, this time on a much broader scale. The Exposition will function in reality as a complete and animate post-graduate course in the industries exhibited. The ultimate scope of the Exposition, namely business results, will not be overlooked. On the contrary, all those interested in the success of the Tenth Exposition of Chemical Industries have their activities focussed on the task to give to the Exposition an economic importance commensurate with its engineering and educational functions. Business results of the previous nine expositions have attained the then limited goals; now the goal is widened and strenuous efforts will be made to have the Exposition serve also as the best medium for developing new and lasting business connections between producers and consumers to the greatest advantage of the producing and consuming activities in the rubber industry.

Another epochal feature of the Tenth Chemical Exposition will be the functioning for the first time of a "Court of Achievement." Meritorious achievements during the last few years, whether in university research, or industrial fields, when considered as such by a specially appointed Committee of Approval, will be prominently exhibited in the "Court of Achievement" a true Hall of Fame for American contributions to the progress of the chemical industry. We are confident that the Rubber Industry will be honorably represented in this "Court of Achievement."

Dickinson Buys Factory

The factory formerly used by the New York Consolidated Jewell Filtration Corp. at Nutley, N. J., owned by Elmer W. Ferris has been purchased by the Dickinson Cord Tire Co., New York, manufacturers of patented machines for the manufacture of cord tires. The factory consists of a group of five mill-constructed brick buildings, containing more than 50,000 square feet of floor space, on a plot containing about five and one-half acres abutting the Newark and Paterson branch of the Erie Railroad where the branch crosses Washington Ave.

The Dickinson company will begin operations at once, employing several hundred machinists. They will move to Nutley that plant located in Long Island City and the one in 19th St., Manhattan. Frederick A. Dickinson, president, represented the corporation in the transaction.

Firestone Develops Wheel

A cushioned wheel and a special cup-cushion tire to go on it have been developed by the Firestone Tire & Rubber Co., Akron, for the Fordson tractor. The wheel and tire serve as springs for the tractor and will absorb many of the jolts to which it is subjected. Between the felloe band and the base of the wheel is inserted a block of resilient rubber which acts as a cushion to cradle the load. It is held in place by a locking ring which is applied in the gutter on the outer face of the wheel. The 40 x 5 cup cushion goes on over the steel cushion ring in which the cushion is seated and the whole assembly of cushion, ring and tire is pressed on the felloe of the wheel. The tire has a gripping tread composed of cups which act as deflection pockets. A series of pockets in the channel and felloe of the wheel serve to prevent circumferential creepage of the cushion and tire.

Domestic Filling Orders

The newly-organized Domestic Rubber Co., Barberton, Ohio, is now filling orders for water bottles, combinations, fountain syringes, bath caps and other druggist and household items. Officers are C. C. Schutz, president; E. J. Schutz, vice president; J. M. Wylie, secretary and treasurer; C. C. Schutz, general manager; J. B. Chisnell, sales manager; and E. J. Schutz, factory superintendent.

Increases Capital

The Ohio-Indiana Rubber Corp., Anderson, Ind., has increased its capital from $2,600,000 to $12,000,000.

ADOPTION OF BALLOONS BY FORD MEANS PASSING OF FABRIC TIRES

Normal Annual Consumption of Tire Fabric Approximately 150,000,000 Pounds, Including Both Square Woven and Cord Fabrics of which 30 Per Cent is Former

The Ford announcement on the adoption of balloon tires is taken throughout the trade to mean the passing of the fabric tire. Ford alone has been responsible for the retention of this type of tire, and his refusal to adopt the cord tire compelled the tire manufacturers to continue the production of square woven tire fabric in large volume. With Ford adopting balloon tires, which are made from cord fabric and not from square woven fabric, the manufacture of fabric tires on a large scale will be discontinued, and they will pass out of general use just as soon as the present stock of tires and fabric is exhausted.

The discontinuance of the manufacture of square woven fabric, of course, will automatically increase the volume of cord fabric required to meet the tire needs of the motor world, and this increase in the consumption of cord fabric, according to the best information available, is likely to be greater than the ability of the cotton yarn industry of the country can supply with its present equipment.

Annual Consumption of Fabrics

The best statisticians in the tire trade estimate the normal annual consumption of tire fabric at approximately 150,000,000 pounds, including both square woven and cord fabric. They estimate that approximately 30 per cent of this total is square woven and the balance is cord fabric. The square woven fabric is used almost entirely in Ford tire sizes.

There is a vast difference between square woven fabric and cord fabric. The first is usually made of 23s yarn, 11-ply, which means that eleven strands of 23s yarn are twisted together to make the compound strands which form the square woven fabric. Cord fabric is made in various ways but one of the most common is from 23s yarn, 5-ply, 3-ply. This means that five strands of 23s yarns are twisted together, and out of the resulting strands of 5-ply yarn a cable is made by twisting three of the 5-ply strands together. The cord fabric is made from the resulting cables of 15-ply. While there are various other combinations used, the principle is the same, the weight of the fabric per tire is about equal and the process of manufacture very similar.

In the square woven fabric the yarns go through one twisting process. In the cord fabric they have to go through two twisting processes. Furthermore, the specifications for the cord fabric in the way of twists per inch and various other requirements affecting the resulting strength and elasticity of the fabric, are such that the twisting process is very much more exacting than that for the square woven fabric, and the production of the twisters is very much slowed down. A mill equipped to make square woven fabric, if it suddenly changed over to the manufacture of cord fabric, would find that it could produce only about one-fifth to one-fourth as much cord fabric as its former output of square woven fabric. This would be on account of the great reduction in the capacity of its twisters.

Capacity of Twisters Important

In the cord fabric industry it is not the number of spindles which govern the output capacity of the industry, but the capacity of the twisters. Unusually large and heavy twisters, with big iron rings, are needed to produce this class of work economically—twisters which are not suitable for most other classes of work. These big twisters are not only very expensive, but very bulky and require a great deal of floor space. Naturally, the mills of the country have been very slow in putting them in, and the total heavy twisting equipment available for cord tire work is not so greatly in excess of the amount needed to turn out the normal annual cord fabric requirements of the trade. It would be wholly incapable of meeting a sudden increase of 30 to 50 per cent in demand, which would be the direct result of an abandonment of the square woven type of fabric. Even overtime work would not suffice, for much of the present heavy twisting equipment is operated on a two-shift basis because of the expensive character of the equipment.

Twisters Will be Needed

Most of the New England yarn mills equipped to manufacture cord fabric have these heavy twisters, and it is this type of equipment that has been so hard to adapt to other sorts of work. If the present indications in the tire trade are borne out, all of these twisters will be needed badly to fill the demand for cord fabric, for it is the same kind of cord fabric that is used either in balloon tires or in the older type of cord tires, and the amount of fabric per tire is practically the same.

While it may take some time for the ultimate effect of Ford's change of policy to be felt by the yarn mills, experienced spinners and yarn distributors now believe that this change will prove the one thing necessary to take up the slack in the New England cotton yarn industry and start all the Eastern yarn mills going once more on the road to prosperity.

Of tire fabrics consumed during 1924 there was a total of 142,415,356 yards, as reported by member tire producers of the Rubber Association of America. The quantity of cotton cloth used for imitation leather should account for approximately 160,000,000 square yards of material. In each average cord tire there is used a total of 3.5 pounds of fabric. Though costing less, square woven or fabric tires require an average of 3.7 pounds. During 1924 the production of cord tires totaled 22,798,810, requiring 79,795,835 pounds of cotton fabric. Shipments during the same year amounted to 22,939,201 tires, requiring 80,287,203 pounds of fabric.

1924 Production

Of square woven tires 1924 production totaled 11,498,509, accounting for the use of 42,544,273 pounds of cotton.

Balloon tires have come to the fore since last March when tire producers shipped 87,733 out of a production of 156,904 tires. There have been steady gains ever since in production and shipments. These casings, though larger in size than the regular high pressure pneumatic casings, require the same quantity of fabric per tire.

During a ten-month period there were produced 4,428,054 balloon tires, making use of 15,498,189 pounds of fabric. During the same period shipments totaled 3,551,323 tires. It is likely that balloon tires will grow in use, particularly since the Ford Motor Company intends adopting the style on many of its models.

Square Woven Fabric Doomed

There are factors in the industry who believe that square woven fabric is doomed since the largest user has decided to change his manufacturing policy. There would be considerable shifting of machinery to accommodate the change. A number, well informed in the market, consider that there are always many buyers whose first interest will be price, and these continually create a market for square woven styles.

Figures on loomage production are interesting at this point. It is reported that one loom making 17¼-ounce fabric will produce 217 yards in a week of 48 hours. A total of 45 looms will produce 18,000 pounds of fabric weekly. The usual width is 60 inches or 28¾ ounces per yard.

The average production of cord fabric is 13,000 pounds per week with four looms running. This last fact shows how unwarranted is the fear that there is likely to be a shortage of cord looms when fabric tires are discontinued. Reports indicate there is a potential overproduction of cords amounting to six to one. There has been a gradual reduction in tire fabric machinery. Still there are plants that have not run since the war, while others have changed over to something else.

CHANGING CONDITIONS IN EXPORT TIRE TRADE

Changing conditions in the export tire trade make it advisable for American tire manufacturers to give closer attention to foreign sales during the coming months; this applies particularly to those companies who have curtailed their export activities in the last two years.

After the trade boom reached its peak in 1920, American tire exports dropped steadily until about June, 1921. The gradual recovery which followed lasted until March, 1923, although price cutting instituted by European competitors constantly narrowed the margin of profit in the trade. In the summer of 1923, the price situation reached such an acute state as to make it extremely difficult for even the best organized and most strongly entrenched American firms to realize profits from the business, while smaller competitors found it advisable to drop foreign business entirely. As a consequence, American tire exports began a decline which continued month by month until December, 1923.

In 1924 the trend was again steadily upward and with the announcement of tire price increases by European competitors in March and April of 1924, the upward trend was accentuated. Further price increases have been made during the first two months of 1925. While the price situation is now sufficiently improved to make increasing competition from American firms well worth while, the margin of profit must continue slight. Those American firms which have supported their foreign agents during the period of very low prices will naturally benefit first from the improved situation.

It is still difficult to induce foreign firms to take on new lines of tires, but with the reasonable hope of still further price increases in store, the effort may well be considered worth while. American firms undertaking an expansion of their foreign distribution are invited to call on the Rubber Division, Department of Commerce, for information regarding tire prices in foreign countries, customs duties on tires, and lists of foreign firms which might be interested in their importation.

Rubber Heel Patented

John George Tufford, Elyria, Ohio, was recently granted U. S. Patent No. 1,532,209 on a rubber heel. The heel has a lower convex tread face and an upper concave attaching face. The attaching face comprises an approximately U-shaped grooved border portion extending parallel with and directly adjacent to the sides and rear of the heel, with the groove being arched transversely of its length, the arching being sharper than the arching of the convexly rounded shoe sole bottom portion. The groove is transversely inclined from the side and rear top edges downwardly and inwardly toward the central portion of the face. A central portion of the concave attaching face within the grooved border portion is substantially re-entrant above the plane of the lowermost edge of the attaching face.

A plurality of nail receiving openings through the tread face are adapted to direct heel securing nails through the grooved portion of the attaching face with the nail heads held in the body of the heel. The conformation of the tread and attaching faces and the placing of the nail directing openings is such that nails passed through such openings and into the bottom of the shoe heel will so distort the heel from its normal form as to bring the surfaces of the heel groove portion and of the opposed shoe bottom into intimate contact, the tread face being thereby made approximately flat. The re-action of the distorted resilient rubber heel portions against the distorting power of the nails causes a tight sealing of the seam between the contracting rubber heel side and rear edges and side bottom.

English Dunlop Profits

The annual report of the Dunlop Rubber Co., which has just been issued in London, shows a net profit, after providing for depreciation and interest on debentures and loans, of £1,500,000 ($7,500,000). The total shown in the previous report was £1,451,000 ($7,255,000), but this covered 18 months' working. Allowing for this, the net profit represents an increase of approximately 50 per cent.

The balance sheet does not take into account the loss of $2,070,000 incurred on the American company, as this is regarded as a deficit incidental to starting up a new business, as inevitable and anticipated.

As expected, no dividend was paid on the ordinary shares. Instead, £600,000 ($3,000,000) is being transferred to general reserve, and after providing for the preference dividend the remaining balance of £525,000 ($2,625,000) is being carried forward. A strong financial position is disclosed in the balance sheet, and the trading condition is also stated to be very satisfactory.

Good to Install Equipment

W. D. Good, president of the Good Rubber Co., Kenmore, Ohio, recently announced that additional new equipment will soon be installed in the factory. A large supply of new equipment was installed not long ago but due to the heavy bookings it will be inadequate. The principal product of the company is toy balloons. Dolls and other rubber novelties are also manufactured in smaller quantities. Twenty-six men are employed.

McKone Reopens

The McKone Tire & Rubber Co., Millersburg, Ohio, recently reopened its plant with a force of 50 hands. At the stockholders' meeting on April 28 plans will be discussed for moving the plant to another city. During the shutdown much new machinery was installed and many improvements made in the plant.

TO PUBLISH DATA ON INDUSTRIAL POISONS

A series of data sheets on common industrial poisons is to be issued under the supervision of the Industrial Poisons Committee of the Chemical Section, National Safety Council. These sheets will be published for general distribution.

At the Louisville Congress this committee made the proposal to publish from time to time the latest available information on poisonous substances used in industry, in the form of a separate data sheet for each substance.

The list of substances for which the tentative data sheets have been prepared includes aniline, arsenic, benzol, carbon bisulphide, carbon monoxide, chlorine, chromium, hydrogen sulphide, lead, manganese, nitrous fumes, phosphorus, toluol and picric acid. The data sheets outline not only the mechanical forms of exposure to the material and the characteristic medical symptoms but also general preventive methods or precautions to minimize the danger. Another feature of practical value is the advice given on special training or emergency equipment to meet any acute exposure that may result from accidental leakage, repair work in tanks, etc.

The personnel of the Industrial Poisons Committee for the current year is given below. Those who desire advice on particular problems or who have worked out useful methods of minimizing poisoning hazards are urged to communicate with members of the committee or with the chairman of the Chemical Section, A. L. Watson, Hooker Electrochemical Co., Niagara Falls, N. Y. Prof. C. E. A. Winslow, School of Medicine, Yale University, New Haven, Conn.; Dr. William F. Boos, Toxicologist, 196 Beacon St., Boston; Dr. C. T. Graham-Rogers, New York State Department of Labor, 124 East 28th St., New York City; A. G. Smith, Chemical Engineer, The Travelers Insurance Co., Hartford, Conn.; Dr. Leonard Greenburg, United States Health Service, 333 Cedar St., New Haven, Conn.; Joseph L. Kistner, Chief, Inspection Department, United States Arsenal, Edgewood, Md.; Charles F. Horan, Manager, Department of Hygiene & Safety, Hood Rubber Co., Watertown, Mass.; S. E. Whiting, Asst. Chief Engineer, Liberty Mutual Insurance Co., Boston (Chairman).

Patent Rubber Method

John L. Meade, Springfield, Mass., inventor of a method of manufacturing hollow rubber articles, recently granted U. S. Patent No. 1,531,712, has assigned the patent to the Fisk Rubber Co., Chicopee Falls, Mass. The method consists in building the articles about a core of wool moistened with a solution of caustic potash, and vulcanizing the article.

Ajax President in Havana

Joseph C. Weston, president of the Ajax Rubber Co., Inc., sailed recently for a short vacation in Havana.

GOODRICH STOCKHOLDERS ATTEND ANNUAL MEETING

At the annual meeting of the stockholders of The B. F. Goodrich Co. held April 15, 1925 in New York, all directors whose term of office expired were re-elected. The stockholders also voted to retire 23,760 shares of preferred stock in accordance with the charter provisions.

At the regular directors meeting which followed, officers were re-elected with the exception of Dr. W. C. Geer who resigned from his active duties as vice-president but will remain on the board of directors and continue to serve in an advisory capacity. The directors authorized the following statement:

The sales volume for the first quarter was about the same as the corresponding period last year and while no statement of earnings is available at this time it is estimated that they are running at a satisfactory rate due, in a large measure, to the fact that the average cost of crude rubber consumed so far this year developed fair profits at present selling prices. The price of crude rubber has recently advanced to what appears to be a definitely higher level for some time to come and in order to maintain a fair margin of profit an increase in selling prices will be necessary.

No action was taken regarding resumption of dividends on the common stock as the directors saw no reason to change the view expressed at the January meeting of the board to the effect that it was inexpedient to commence disbursements under the circumstances until a more substantial surplus had been accumulated.

Following the meeting, President Work declared that, although earnings thus far have been satisfactory, the recent advance in crude rubber prices will necessitate an increase in selling prices for tires.

Cushion Tire Patented

Arthur A. Robb, inventor of a cushion tire recently granted U. S. Patent No. 1,533,339, has assigned the patent to the B. F. Goodrich Co. The tire comprises a pair of annual, spaced-apart base members, an arched rubber tire-body having its legs respectively vulcanized to the base members, and a transversely split spacing ring mounted between the base members and substantially flush therewith at the inner periphery, said base members and ring being formed with portions interlocking them as to both circumferential and lateral relative movement.

New Methods Help

At a meeting of the Amalgamated Rubber Estates, Ltd., just held in London, an interesting communication from Mr. Inhelder, one of the company's plantation experts, was read. It showed that great benefits had been derived from the introduction of new methods.

"I visited Sumatra last year," wrote Mr. Inhelder, "where I inspected the company's rubber estates. Their large mature rubber areas on Dolok and Bahilang estates were in first class condition and much improved in appearance as the result of the new tapping system which has been adopted, and the adoption of leguminose green cover plants instead of the former system of a clean weeding. Diseases which existed under the daily tapping system have now practically been eliminated."

Seger Speaks at Naugatuck

There will be steady work for all who are willing to give a fair day's labor for a fair day's pay, Charles B. Seger, president of the United States Rubber Co. told the members of the Naugatuck (Conn.) Chamber of Commerce at the annual banquet recently.

Mr. Seger praised the rubber plants and said that while the outlook for the year is not one of booming prosperity he does not expect there will be a shortage of work. He pointed out that the United States Rubber Co. has a $38,000,000 investment in Naugatuck and that the five year period in 1905 saw $7,000,000 paid in salaries and wages alone.

For the period of five years ending with 1919, the salaries had been increased to $16,120,000 and for the five years ending with 1924, the salaries paid totalled $18,600,000.

The output in the five years ending in 1905 amounted to $38,000,000. In the five years ending in 1910, the production was increased to such an extent that the revenue totalled $45,000,000. And in the five year period ending in 1924, the output netted the United States Rubber company $58,000,000.

The figures, Mr. Seger said, are evidence of the value of the rubber plants in Naugatuck and the reason why it is hoped that steady work would be continued. Mr. Seger, although born in the South, explained that his father was born in Connecticut and had lived in Danbury. The Seger homestead of Danbury, which is 175 years old, is now owned by him. He had not been in the borough since 1919, he said, due to stress of business.

To Sell Bergougnan

Charles E. Stokes, receiver of the Bergougnan Rubber Corp., Trenton, N. J., announces that the entire plant, equipment and real estate of the company will be sold at a receiver's sale on the premises on April 30 at 2 p. m. by order of the United States District Court, District of New Jersey. The present replacement value of the property is $760,000. A folder containing complete information of the plant, machinery and real estate has been issued by the receiver.

Patents Sponge Method

Frank S. Malm, Chicago, recently granted U. S. Patent No. 1,533,197 on the manufacture of sponge rubber articles, has assigned the patent to the Western Electric Co., Inc., New York. The process comprises mixing together rubber, a vulcanizing agent, a gas producing substance, a volatile rubber solvent, and then vulcanizing the composition.

OVER 150 CHEMISTS AT MEETING IN BALTIMORE

The Spring Meeting of the American Chemical Society, held in Baltimore at John Hopkins University April 6 to 11 brought together over 150 of the leading rubber chemists in the country. The Division of Rubber Chemistry held its meetings on Thursday and Friday, April 9 and 10.

On Thursday morning several of the papers prepared for this meeting were read and the balance were given during the morning and afternoon sessions on Friday.

The dinner on Thursday night at the Southern Hotel was, however, that portion of the trip to Baltimore which the chemists will long remember—thanks to Dr. Kelly of Goodyear and Winfield Scott of the Rubber Service Laboratories. This team distinguished itself in the usual manner and conducted elaborate initiations into the Royal Bengal Bicycle Club —an honor awarded those speakers (or tellers of stories) who survived the cheers of the diners. Suffice it to say that those who attended will not forget the dinner.

Complete abstracts of all papers read at the meeting of the Rubber Division were published on Page 22 of the April 10 issue of THE RUBBER AGE.

Buy Gordon Tire Property

A tract of four acres in the southwest part of Dayton, Ohio, formerly owned by the Gordon Tire & Rubber Co., has been purchased from the receivers by the Chamber of Commerce for an armory.

C. D. Cugle

Charles D. Cugle, president and treasurer of the Washington Rubber Co., Washington, D. C., died recently at his home, 1734 P St., after a long illness. He is survived by his widow, two daughters, Mrs. Charles P. Gilbert and Mrs. Henry M. Kieffer and a son, Kenneth W. Cugle.

L. D. Apsley

Lewis Dewart Apsley, president of the Firestone-Apsley Rubber Co., Hudson, Mass, died recently in a hospital at Colon, Panama. Mr. Apsley was born in Northumberland, Pa., Sept. 29, 1852. He became a travelling salesman, then assistant superintendent in the Wanamaker store at Philadelphia. In 1885 he went to Hudson and began the manufacture of raincoats. He is survived by his widow.

Fred L. Page

Fred L. Page, vice president of the Colorado Rubber Co., Denver, Col., succumbed recently to an attack of peritonitis at St. Luke's Hospital following an operation. Mr. Page returned to Denver recently from Palm Beach, Fla., where he had been visiting during the past six weeks. He has been a vice-president of the Colorado Rubber Co. for the past twenty years. Mr. Page is survived by his widow, a brother, Irving L. Page, and a sister, Mrs. J. A. Jackson.

FACTORY EQUIPMENT

King Hose Clamps

A number of novel features are embodied in the "King" Double Bolt Hose Clamp, on which Letters Patent were granted Jan. 6, 1925. Due to its design and construction it can be attached quickly and will hold more securely.

An original feature on the clamp sections consists in the extra long, heavy bolt lugs, which are set low, distributing the strain uniformly over the entire circumference of the clamp rather than at the bolt lugs. This feature permits the clamp to be pulled up to the limit of strength of bolts without lugs bending. As a result of its novel shape and design the invention possesses many advantages. It is easily and quickly attached and does away entirely with the need of oversize clamps.

"King" Double Bolt Clamps

Perhaps its principal feature is the type of "Saddle," which is provided with a doubletongue, and is quite long. By this arrangement the saddle stays set on the hose, and the half sections of the Clamp, slide over the tongues easily, which prevents jamming of the hose, and also gives adequate clamping strength, whether the half sections of the clamp extend ½ inch or 2½ inches over the tongues of saddle.

Another advantage is that any size of clamp can be adjusted to hose of wide variance in diameter. An 8-inch clamp open and closed is shown in the illustration.

Constructed of malleable iron, the "King" Double Bolt Clamp is made in sizes for hose from 4" to 12" inclusive. It is manufactured by the Dixon Valve & Coupling Co., Philadelphia.

Aetna Doubles Capacity

The capacity of the Ashtabula plant of the Aetna Rubber Co. has been doubled through the recent completion of a new power house erected and equipped at a cost of $60,000. The factory is now turning out 2,000 battery boxes a day. In addition to the necessary power and pump machinery, the new building houses a 700 h.p. boiler using pulverized coal. At the side of the new power house a silo is being built which will have a capacity of six carloads of coal. Some departments of the factory are operating 24 hours a day with a force of 130.

American Tire Prosperous

The plant of the American Tire Corp., at Niles, Ohio, is producing 550 inner tubes daily. Other departments are at present idle, only thirty men being employed. No tires will be made until the present overstock of casings has been disposed of. J. E. Hughes of Pittsburgh is temporary manager of the Niles factory which is owned by a group of men interested also in the Salem Rubber company, Salem, Ohio.

B. G. Work Returns

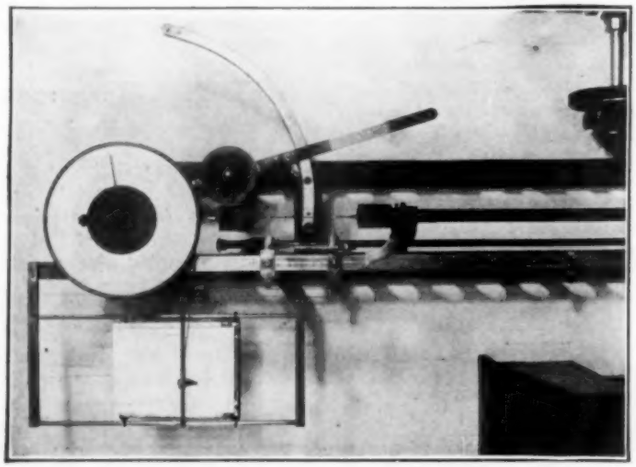
"The volume of business of Goodrich should be about the same as it was last year," said B. G. Work upon his return to the United States recently on the Aquitania.

"Our volume of business for the first two months of the year was about on par with last year.

"Tire prices have not been adjusted to meet the increased crude rubber and fabric costs. What would have been a fair profit for tire manufacturers at the present prices has been deeply cut into by the increased cost of raw material.

"The present high price of crude rubber has been brought about by the shortage of current supplies. This, however, will tend to stimulate the rubber industry, because it will increase the amount of rubber grown. I look for crude rubber to stay above 36 cents a pound. If it continues above 36 cents a pound, on the first of May a 10 per cent increase in quantity will automatically be released by the Stevenson plan. If the price stays at the same figure for another quarter, another 10 per cent increase will be released, so that by the end of the year, we will have 85 per cent production of crude rubber, which is practically normal, because very few of the rubber growers can produce over 80 per cent. Last year in the United States rubber manufacturers used approximately 330,000 tons.

"I visited our interests in England, France and Germany. In France the situation is unfavorable, but in Germany, the company that we have an interest in is doing very well. It is operating comfortably, and employs about 12,000. British Goodrich is coming along very nicely, and within six months we will have good production from our English factories."



The New Stress Strain Recording Device Perfected by the Rubber Service Department of the Roessler & Hasslacher Chemical Co. for Testing Rubber Samples

The Coloring of Rubber Products

Colors Used in the Rubber Industry Must Resist the Heat and Reagents Employed in Vulcanization

By **Mark S. Grant, B.S.**

THE manufacture of colored rubber goods is an important function of the average rubber company, but the attention given to this phase of rubber manufacture has not been very great. Rubber men have generally been content to view this part of rubber manufacturing in an empirical light and to use certain standard coloring matters, either pigments or dyestuffs, which practical experience indicated give the desired results. The matter is, however, of more importance than such treatment would indicate for not only are pigments used to color rubber and dyestuffs used on the surface to color the outside of the rubber article, but colored fabrics are also used in the manufacture of some rubber products. The question naturally arises as to the properties that colors so used should possess. Colors must possess certain special and important properties of their own before they can be employed in the coloring of rubber products.

The Dyeing of Fabrics

Textile materials are dyed for the purpose of enhancing their beauty and of satisfying the desire for color. For the same reason colored fabrics are employed in the manufacture of rubber merchandise of certain sorts. The rubber manufacturer must be provided with colored fabrics by the textile industry, and the colors used must be able to stand the various treatments to which rubber goods are subjected. It is necessary for the rubber man to understand what should be demanded of colored textiles that he uses in his manufacturing, just as much as for the textile man to be able to produce dyed fabrics that will withstand the conditions peculiar to rubber goods. It is not intended to go into great detail on the dyeing of textiles for the rubber trade. That is the function of the textile man, but it is held that the rubber manufacturer should know definitely what to expect from the textile dyer.

Undoubtedly the most important consideration is how the dyed fabric will stand up against the heat and reagents employed in vulcanization. That is, after all, the prime requirement of all coloring matters used in the manufacture of rubber merchandise. If the color will not withstand the action of heat and the accelerating agents as well as of any fillers that may be added to rubber, then no matter how beautiful that color may be or how many other advantages it may possess, it cannot be employed for coloring rubber goods.

It is necessary that the color in the fabric after vulcanization be clear and full and it is possible to dye fabric in the proper manner that such results are obtained. This is what the rubber man should demand of the colored textiles that he employes in his manufacturing process. The rubber man has been accustomed to rely implicitly on the textile industry for dyed fabrics which will withstand vulcanizing and other conditions without deterioration. He has been perhaps too apt to take it for granted that any dyed material that is claimed to be suitable for his purpose will give the desired results. He has not realized that the great variety of textiles that he used in his manufacturing processes require in each case special treatment by the dyer in order that the dyed fabric be fast during vulcanization.

Tire fabrics, ducks, twills, merino nets, wool fleece nets, cotton flannels are just a few kinds of textile materials that are employed in the manufacture of rubber goods. Each must be dyed according to a definite process and with certain dyestuffs that are peculiarly adapted to the fabric and which must at the same time resist the action of vulcanization, of sulphur and other ingredients as colors, fillers, etc.

The rubber manufacturer must determine for himself the following important characteristics of the dyed fabrics that he uses in his manufacturing process: In the first place he must be sure that the dyeing of the fabric has not impaired its strength, for the wearing qualities of the rubber merchandise will depend to a large degree on the mechanical resistance of the fabric. Then again he must be sure that the dyed fabrics are free from any chemicals or substances which may be decomposed during vulcanization with the liberation of products which may have an injurious action on the textile fiber, tending to weaken it. Furthermore it is also essential that the color of the fabric should not change during vulcanization and that it does not become spotty.

Dyes are used for coloring fabrics directly or they may be used for coloring the finished rubber article by dissolving the color in a suitable solvent and then dipping the rubber article in that solution. The most familiar example of this process being used in actual practice is in the coloring of rubber toy balloons. One process of coloring and making balloons consists in the use of gasoline soluble dyes. The solution of the dye in gasoline is added to the rubber cement. The thin cement is then employed for coating the rubber article, the gasoline being allowed to evaporate after which the form is dipped into a sulphur chloride bath and vulcanized.

Dyestuffs have also been recommended for use in the coloring of the rubber mass. In this case the dyestuff is added directly to the rubber mixture and is worked up with it and the other ingredients on the mixing mills. In other words the dyestuff is used in the same way as the mineral pigment. The practicality of this process will of course depend almost entirely on how well the dyestuff is able to withstand the effects of vulcanization. Either a color lake or a straight dyestuff may be employed for this purpose.

Research of R. Ditmars

A considerable amount of research has been done on this subject in Germany by Rudolph Ditmars. He has pointed out that the great majority of coal tar colors cannot be employed in the dyeing of rubber in this manner for the simple reason that they cannot stand the high temperatures of vulcanization, which often reach 300 degrees F. On the other hand it is possible to vulcanize rubber by means of other processes in which the temperatures do not rise nearly to so high a point.

Ditmars also found that certain of the vat dyestuffs, related to indigo, are able to withstand the conditions of vulcanization and give a great variety of beautifully colored products. Dyestuffs such as the anthraquinone derivatives appear to be suitable for this purpose.

Another idea in the coloring of rubber in the mass with an organic dyestuff is to develop the coloring matter right in the rubber mass. The principle on which this process is based is the same as that involved in the printing of textile fabrics wherein the cloth is printed with one ingredient, possessing no color or only a slight shade, and then is developed by passing through the bath of another chemical which unites with the one on the fabric and produces a fine color. Thus the process of diazotization may be carried out in this manner not only in printing fabrics but also in dyeing rubber in the mass.

The amino compound is directly incorporated with the rubber batch and then the diazotization is accomplished by means of a solution of sodium nitrate in nitric acid. This is one way of giving rubber a brilliant red coloration throughout, for the well known and much used red dyestuff, paraniyraniline

red, may be developed within the body of the rubber in just this manner.

It has now become quite ordinary to point out the relation between any operation that is performed on rubber and the principles of colloid chemistry. But this connection has only been understood recently. It is known that rubber is a fine example of an irreversible, or practically so, colloid, and that the character of the materials that are dry mixed with it, that is whether they are colloidal or not, has a very important bearing on the properties of the final vulcanized product. The significance of this property of the substance was first recognized in conjunction with the use of rubber fillers and pigments. It was seen that the colloidal character of the substance employed in the filling operation had a great deal to do with the increase in strength of the rubber. Thus it was found that such materials as finely colloidal carbon black and the like had a much more potent action on the rubber than the non-colloidal materials. Furthermore it was also learned that the use of non-colloidal materials was apt to cause rapid internal deterioration of the rubber due to the fact that the sharp edges of crystalline substances actually cut into the rubber and gradually ground it away.

As far as the coloring matters are concerned that are added to the rubber mixture the same consideration holds good. When mineral matter is employed, it is highly important to see that the pigment is in the proper state of sub-division and the closer this is to the colloidal stage, the better will be the results obtained. Organic dyestuffs are generally of colloidal nature and hence are very well suited for admixture with the rubber batch.

A Few Important Coloring Matters

The most important of all the rubber colors is black followed by white, red and yellow.

Undoubtedly the most important black pigment is carbon black. This pigment is obtained in a very fine state of subdivision and is practically colloidal in character. It possesses a very deep color and great coloring effect, giving an intense black to the rubber. A distinction must be made between carbon black which is obtained from burning natural gas in the absence of sufficient air which results in the deposition on cold surfaces of an extremely fine, impalpable powder, and other forms of black pigment obtained by incomplete combustion of combustible matter. Particular reference is had to lampblack which is obtained by burning oils, fats, tars and the like in the absence of sufficient air for complete combustion and allowing the thick black smoke produced to precipitate its carbon content on cold surfaces. This pigment, while being very valuable, is not in so fine a state of subdivision as carbon black, and hence does not yield as good results as the latter.

A word must be said about the other black pigments which are used but which are by no means as important as carbon black. There is a certain amount of uranium sulphide used for this purpose but this pigment is too expensive for ordinary use. It acts as a preservative of the rubber as well. Bone black and graphite blacks are also used to some degree and black hypo, as it is called, which is a mixture of sodium hyposulphite and lead acetate, is employed both as a filler, pigment and vulcanizing agent. Two varities of this substance are known, the white variety being transformed into the black sulphide during vulcanization and the black variety which already contains practically all lead sulphide.

White Pigments

There are many white pigments that are used in coloring rubber. A large number of substances that act as mere fillers also are employed for this purpose. It would appear however that the most important of the white pigments and perhaps the most beneficial as well is oxide of zinc. This substance possesses far more importance as an aid in the vulcanization of rubber and as a potent agent in improving the qualities and mechanical strength of the finished product than as a mere coloring agent.

Zinc white is an oxide of zinc and it possesses the important advantage that while it is affected by the chemicals that are used in vulcanization, nevertheless the whiteness of the vulcanized goods is enhanced rather than impaired. This is due to the fact that the sulphur during vulcanizaion reacts with the oxide of zinc to form sulphide of zinc which is an even more intense white than the oxide. It is very important to see that the zinc white does not contain any lead salts, for often the ore from which the pigment is made will contain lead and while this may be present in the form of lead sulphate, which is a white substance, nevertheless when this salt of lead is subjected to the action of sulphuretted hydrogen, (which is formed during vulcanization), a black sulphide of lead will be formed to a certain degree and the white color of the article will be spoiled.

It may be interesting to describe a very simple test whereby it is possible to determine at once whether the zinc white contains any impurities. Commercially pure zinc oxide will dissolve in hydrochloric acid (muriatic acid) and no residue will remain. If the solution of the pigment takes place with effervescence, then it may be concluded that the pigment is not pure. The evolution of carbon dioxide gas which is detected by passing the same into lime water with resulting precipitation of a solution indicates the presence of carbonates in the pigment. The presence of sulphide of zinc, which is also a white pigment, is indicated by the characteristic odor of sulphuretted hydrogen gas and its action in causing immediate darkening of a piece of filter paper dipped in a solution of lead acetate.

It is generally known that there are many pigments on the market that are called zinc whites but there should be no confusion between zinc oxide white and these other zinc pigments which are cheaper and less effective. Exception should be made, however, in the case of zinc sulphide which is a very good white pigment and is used to a large extent by rubber manufacturers, especially in the manufacture of white goods cured by dry heat, dental rubbers and the like. The sulphide pigment possesses the important properties of not changing when subjected to vulcanization and of having a distinct preservative action on the rubber. Here again it is important to see that the pigment does not contain any impurities which would impair the color of the vulcanized article. However in this case there is no difficulty in recognizing the presence of these impurities for in the manufacture of the pigment by what is known as the double precipitation process their presence is immediately detected by the darkening of the color of the sulphide as all other metals possess colored sulphides.

The Use of Lithopone

Another valuable white pigment is lithopone. Lithopone is a mixture of barium sulphate and zinc sulphide. The main difficulty with lithopone is that it loses its whiteness on exposure. The reason for this has been investigated by many experimenters and various processes have been devised for the perfection of a lithopone which would not turn gray on exposure. As far as rubber is concerned this is not so great a disadvantage as to make it advisable to avoid using this pigment, but the fact still remains that where a perfect and permanent whiteness is desired, this pigment should not be employed.

There are other white zinc pigments such as carbonate of zinc but this pigment is not important in modern rubber practice. Calamine white which is the native zinc carbonate is another white pigment occasionally used.

An interesting development in recent times has been the use of clays as white pigments and fillers for rubber goods. There are of course a great many different varieties of clays and some of them possess a fine white color. Furthermore clay is a colloidal substance or rather contains a certain percentage of colloidal argrillaceous matter. Its physical properties are therefore suitable for its application in the rubber industry. Time will tell just how far this substance can go in replacing the other more expensive white pigments that are now so universally used in the rubber industry.

Mention must also be made of barium white or blanc fixe which is a very finely ground barium sulphate or heavy spar. Blanc fixe is by nature a rather heavy substance and while it is rather largely used by rubber manufacturers, there is no question but that it does not give the good results that are ob-

tained with the use of zinc oxide. It tends to increase the weight of the rubber article which is desirable only under certain conditions.

Red pigments* are also of great importance in coloring rubber. Most all the important red pigments used in coloring rubber have a mercury base. Thus vermilion is a form of mercury sulphide. Red chromate of mercury and iodide of mercury are also red pigments. Various oxides of iron are also used for this purpose, such as colcother, hematitte and red ochre as well as Venetian red. Antimony crimson sulphide is also a favorite red pigment.

Blue pigments are not much used in coloring rubber. Prussian blue, cobalt blue, indigo blue, smalt and ultramarine are used to some extent.

The green pigments are scare and are not used to any degree in coloring rubber except for very special merchandise. Chrome green, terra verte and ultramarine green are employed.

Antimony golden sulphide is used at times for coloring rubber yellow. However this substance is employed not so much for the color but because of the fact that the grade of rubber that is produced with it is very high. Other yellow pigments are aureoline, the double nitrite of cobalt and potassium, arsenic yellow, cadmium yellow, zinc yellow and yellow ochres.

Dyeing the Finished Rubber Article

While from one-tenth to half a per cent solution of the dye in benzine and benzene are employed in the coloring of rubber articles by simple dipping, concentrated solutions are employed as well in coloring certain classes of rubber products. Weak conditions are also very suitable for goods that are to be vulcanized in the cold but for hot vulcanization the solutions must be stronger. There is no doubt but that the colors suffer when exposed to the heat of vulcanization.

*See "The Manufacture and Uses of Red Oxide," THE RUBBER AGE, March 10, 1925, page 369.

It has also been found in practice that rubbers that are employed for erasing purposes require concentrated solutions and in this respect it has been observed that benzene is a better solvent than benzine as it dissolves more of the dyestuff. There is a method of carrying the dyestuff into the mixing by the use of substitutes and hence the oil from which this is manufactured is first colored or the color may be added to the sulphur chloride used as the vulcanizing agent or mixed with the colza oil used in the process.

One very important property that the dyes must possess that are employed in this manner is that they must be insoluble in water; otherwise the rubber article will color everything that comes in contact with it. Furthermore the dyestuffs must be resistant to acid, for acids are formed during the vulcanization of rubber. It has been conclusively proven that in the vulcanization of rubber both sulphuretted hydrogen and sulphurous acid are formed which, before they react to produce colloidal rubber, the active vulcanizing agent, may attack the dyestuffs if they are not resistant to these gases.

Lakes are used in the coloring rubber and are rather easy to form. Thus a lake may be made from an aniline dye by making a water solution of the dyestuff and then placing it in a vessel which is provided with a stirring apparatus. Then finely powdered barium sulphate is added and as the stirring is continued a solution of barium chloride is added. The reaction is completed by heating. The precipitate or lake that is formed is then separated from the liquor by filtration, the excess chloride is washed away and the lake is dried and sifted. Only acid dyes can be used in this manner for they alone form lakes with the aforementioned bases. It is easy to vary the color of the lake by substituting other materials for the barium sulphate. Thus to make a deep red lake it is of advantage to employ red lead in place of barium sulphate.

An interesting process for coloring rubber goods is described in French Patent No. 419,281. This consists in the addition of iodine to the rubber mixture after the other ingredients have been incorporated. The result is that the subsequent vulcanization of the rubber is assisted in such a way as to render possible the production of any color in the finished article by using the proper color in the mixture.

In conclusion it may be said that although many dyestuffs are employed in the coloring of rubber, by far the greatest proportion of colored rubber merchandise is manufactured with inorganic coloring matters.

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Two Cases With An Interesting Freight Rate Principle

Two cases have come under my attention recently which involve a fixed, but little known principle of law. This principle touches or could touch every shipper and receiver.

CASE 1.

A commission merchant received a carload of goods by freight. The railroad company presented him with the bill for freight, which he paid. The goods were sold, the freight of course becoming a factor in making the price, and the commission merchant deducted his expenses and commission and remitted the balance to his principal. A week later the freight agent called him up and told him a mistake had been made on the freight. It should have been about $120 more than it was. The commission merchant refused to pay on the ground that it was the railroad's own loss. It had collected a certain rate from him, he had sold the goods and remitted on that basis, and had none of his principal's money in his hands.

CASE 2.

A jobber bought from a manufacturer twenty cars of merchandise, f.o.b. the seller's station, which meant that the buyer paid the freight. The railroad company rendered a freight bill which the jobber paid. Then he fixed a resale price based on the freight among the other items of expense. He next went out and made binding contracts to resell the whole twenty cars. Before the goods were shipped the railroad company came along with a bill for $630.26 more freight, saying it had made a mistake The jobber refused to pay on the ground that it was up to the railroad to know its own rates—he didn't know them, and after it had rendered him a bill which he had paid, it was too late, especially after he had resold twenty cars of goods on the strength of the bill rendered, to collect any more.

Judged by all the ordinary principles of justice and common sense, it would seem as if the railroad would have to stand the loss in both these cases. The mistakes were its own and it should not be allowed to throw the loss on an innocent shipper or receiver. Yet I was compelled to advise the clients in both these cases that they were responsible for the additional freight and would surely have to pay it. I was unable to convince them that there was anything fair or logical in this and am free to confess that very frequently this principle of law works great hardship.

The principle is this: that it is of the highest importance that common carriers be held inflexibly to fixed rates, uniform to every shipper. So many and varied are the ways in which the uniformity of rates can be varied by guileful and dishonest carriers, that the law compels everybody to pay the fixed price and posted rate, even under conditions such as arose in these two cases. A very good principle, no doubt, but in no other situation could one party to a deal make a certain price or charge, and then when the other party had acted on it, come back on him and say, "Oh, I made a mistake you must pay me more than I agreed to take." The railroad law is peculiar unto itself in that it protects the railroads from any mistake they can make in the making and collection of freight rates, and empowers them to go back and get the balance if they have undercharged.

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VULCANIZATION & ACCELERATORS

By Andre Dubosc

PART II (*CONTINUED*)

Natural and Mineral Accelerators

An Account of the Author's Experiments to Discover the Action of Resins on Sulphur in which he Found that all Resins Form Sulphuretted Hydrogen Gas which Decomposes During Vulcanization to Form Colloidal Sulphur

THE following tabulation shows the percentages of resinous materials that were removed from the rubbers by means of extraction with acetone in the cold.

Para crepe	3.05 per cent
Rambong crepe	7.04 per cent

Before the rubbers were mixed with the vulcanizing agents and subjected to vulcanization, they were left at rest for a period of three months. The extracted rubbers were accordingly permitted to regain their original condition, if the treatment with acetone had had the effect of altering their physical condition.

Then these samples of extracted rubbers, as well as the original rubbers, before being subjected to treatment with acetone (used as a check), were mixed with five per cent of sulphur. Then all the samples of rubber were vulcanized at various temperatures, viz., 135 degrees C, 139 degrees C, and 148.5 degrees C.

The results that were obtained from the vulcanization of these rubbers and from the testing of the rubber samples themselves after vulcanization are summarized in the following tabulation.

Hevea Rubber

Results of tests made with samples of rubber that had been aged for a period of one week. Vulcanization was carried out for a period of three hours at a temperature of 139 degrees Centigrade.

Nature of rubber	Resistance to breaking in grams per sq. millimeter	Elongation length is equal to unity	Present condition
Non treated	1974	10.5	Destroyed
Extracted	1553	8.5	Destroyed

Vulcanized for three hours at a temperature of 135 degrees C.

Non treated	999	10.8	Good
Extracted	515	7.1	Destroyed

Rambong Rubber

Vulcanized for three hours at a temperature of 148.5 degrees C.

Nature	Resistance to breaking in grams per square millimeter	Elongation Length equals unity	Present condition
Non treated	775	12.7	Good
Extracted	871	11.1	Destroyed

Vulcanized for three hours at a temperature of 139 degrees C.

Non treated	1,163	13.7	Destroyed
Extracted	1,115	8.7	Destroyed

As far as the rubber samples, which were extracted with acetone, are concerned, it is apparent from the results that are given in the above tabulations that the more care used in the extraction of the rubber samples with acetone, the lower will be the quality of the vulcanized rubber product. These samples are less strong and less elastic after vulcanization, but perhaps the most striking effect is the rapidity with which the rubber samples deteriorate after vulcanization.

The vulcanization process, when carried out at a temperature of 135 degrees C, is not very far removed from good vulcanization, and the sample of rubber which has not been subjected to extraction with acetone will remain in good condition for three years. The rubber gum, which is extracted with acetone, gives a vulcanized product which is extremely weak, but which is not entirely destroyed.

The same effects were remarked in the case of the Rambong rubber, although the degree of their activity is somewhat less.

Other Tests on Vulcanization

A great many other experiments have been made along similar lines and the results obtained from the vulcanization were found to be less concordant. However the characteristic feature of all the samples of rubber which were subjected in the first instance to extraction with the aid of acetone was their softness and lack of nerve, which is opposite to the properties of rubbers which were not subjected to extraction. This difference in behavior was of such nature that the crude rubbers appeared to be unaltered.

In order to make certain that there was nothing in the intrinsic character of the rubber itself that was in any way responsible for these results, an entirely new series of experiments were made with Hevea rubber crepe. In these tests a ninety per cent alcohol was employed in the place of acetone and the extraction was extended over a period of four months. It was found from these experiments that 1.94 per cent of the resinous matters were extracted, which means that two thirds of the quantity of resins removed by means of extraction with hot acetone are extracted from the rubber with the aid of cold alcohol.

The mixture employed in vulcanizing the rubber that had been extracted with acetone contained oxide of zinc and the vulcanized samples were first allowed to age for a period of twenty months before they were tested.

The vulcanized products that were obtained from the rubber gum which had not first been subjected to extraction with the ninety per cent alcohol were found to be in a very good condition, but those samples prepared from alcohol-extracted rubbers were soft and weak, so that they may be considered as being practically destroyed.

The following tabulations give the results obtained when these samples of vulcanized rubber were examined for their physical properties.

Nature	Resistance to breaking in grams per square millimeter	Elongation at rupture	Percentage of permanent elongation	Per cent elongation under a constant weight of 60 grams
Non treated	1593	6.3	3.8	44.2
Extracted	419	5.8	12.6	76.2

The deterioration that is induced in the vulcanized rubber samples by means of extraction with the aid of alcohol, resulting in the removal of the resinous matters, is either total in effect or at least very apparent. The effect obtained is about the same when alcohol is employed as the solvent as when acetone is used. As far as the acetone is concerned, the same effects are secured either when the extraction is carried out with the hot solvent or in the cold."

The part played by the resinous constituents of the rubber gum in the process of vulcanization has been more clearly defined in this particular case than in the study first made on this subject by Weber. It seems to be an element that is absolutely necessary for vulcanization of the rubber. Now what may its action be as far as the sulphur is concerned? This is the phase of the problem that Stevens and Beadle neglected to investigate, and it is this particular phase that is of the highest importance.

Action of Resins on Sulphur

The writer made a series of investigations on this subject and in the following paragraph he will give an account of the results obtained. In the first place a resin was examined which had been extracted from Hevea rubber by means of acetone. This resin was mixed with eighty per cent sulphur in a mortar, which corresponds closely to the proportions in which these two substances actually exist in the rubber mixture as it is ordinarily vulcanized.

This mixture of resinous matter and sulphur was mixed in a flask which was provided with a tube for the disengagement of the gas. This flask was then heated in an oil bath whose temperature was maintained at the ordinary point prevalent during the vulcanization process, in other words at 135 degrees Centigrade. It was remarked that at that temperature an abundant evolution of gas took place. This gas was identified as sulphuretted hydrogen, and the quantity of this gas thus produced was determined by passing it through a solution of lead acetate. Hence the particular effect of resinous matter on sulphur, and vice versa, at a temperature of 135 degrees C, is to form sulphuretted hydrogen gas. This refers to the resinous matter that is contained in rubber. Then this gas, under various influences, will decompose during the vulcanization operation and give rise to the formation of colloidal sulphur.

The exact effect of the resinous matter during the vulcanization process is therefore very clearly defined.

Effect of Removal of Resinous Matter

If the resinous matter is removed from the rubber gum, it is necessary to substitute for it a substance that has the power of furnishing sulphuretted hydrogen by reaction with sulphur, or else which is able to decompose and yield sulphur in the colloidal condition. Such a substance is for example antimony pentasulphide. Various samples of rubber, which had been first extracted with the aid of acetone and thus deprived of all contents of resinous matter, gave excellent products if they were vulcanized along with antimony pentasulphide of a high grade of purity and which does not contain any free sulphur.

It is suggested that a sample of rubber, which has been extracted with the aid of acetone and thus deprived of all its resinous contents, be taken and mixed with sulphur. At the same time there is added to the mixture about three to four percent of a resin derived from another rubber extraction. Or else from five to seven percent of a dead Borneo rubber is used in making the mixture.

It is found that such a mixture will vulcanize without any difficulty at all at a temperature of 135 degrees C. The vulcanized product that is obtained from this rubber mixture will possess all the excellent physical properties, from the standpoint of resistance to rupture, just as a rubber which had not been treated at all, and from the standpoint of durability it is found that this vulcanized product behaves just like a virgin rubber.

Moreover these facts are all well known in practical work, although no work to mention of has been carried out along scientific lines to discover what the reasons were for these phenomena. Furthermore it has been realized for a long time by the practical rubber man that it was very necessary for the raw rubber gum to contain a sufficient amount of natural resinous matters, if good results were to be obtained in the vulcanization of this rubber. The fact of the matter is simply this that when utilizing certain grades of sticky rubber, which were found to contain a large proportion of impurities but no resinous matter, it was discovered in the United States that it was absolutely essential, in order to obtain a rubber which had been vulcanized in the proper manner, to add to the mixtures either the resins which are derived from djeulatong rubber, or a rubber which contains a large amount of resinous matter, such as pontianak. Certain kinds of reworked rubbers in which there is absolutely no resinous matter at all cannot be vulcanized, unless there is added to them a certain definite percentage of highly resinous pontianak rubber or of the resinous matter that is extracted from djeulatong rubber.

Action of Sulphur on Rubber

In order to tell exactly what the details are surrounding the mechanism of the action of sulphur on rubber, isolated from other substances, the following additional test was made.

A sample of rubber gum was taken from which the resinous matter had been entirely extracted with the aid of acetone. The acetone extraction was carried out at an elevated temperature. This rubber was then mixed with sulphur in the usual proportion and the mixture was placed in a flask which was furnished with a tube for leading away any gas that might be developed. This tube was connected with a wash bottle in which there was placed a solution of acetate of lead. The flask containing the rubber sample was heated to the normal vulcanizing temperature, that is 135 degrees C.

As in the case of the experiment which was carried out with resinous matter which had been mixed with sulphur, it was found that a rather considerable amount of sulphuretted hydrogen gas was evolved, although the quantity of the gas thus generated was much less than in the resin experiment. The question then arises, where did the sulphur get the hydrogen which it had to have in order to form sulphuretted hydrogen gas? Does it not appear as if the rubber itself decomposed and thus evolved this gas? It is more than probable that some reaction took place which involved in the methyl groups, CH_3 which are found in a chain system in the rubber molecule, and that the dimethyl octadiene was converted into simple octadiene, as a result of this reaction. In other words butadiene rubber is obtained, the properties of which are quite different from those of normal rubber gum. Furthermore rubber which is heated in the manner, described above, will not vulcanize at all.

On the other hand if the proper amount of litharge is added to it, it vulcanizes perfectly. This fact leads to the conclusion that it is the litharge that acts as the oxygen carrier, that furnishes the oxygen that is required to produce sulphurous acid, SO_2 which then reacts with sulphuretted hydrogen to form a deposit of colloidal sulphur within the rubber mass.

Sulphur Dioxide Essential

The fact that the presence of sulphur dioxide, or sulphurous acid, is absolutely necessary if the rubber gum is to be properly vulcanized has been recognized by Mathew and Strange who mentioned the same in their patent specification, (see English Patent No. 2070 of 1914). In this patent they describe the reaction of liquefied sulphur dioxide gas on a solution of butadiene rubber in benzine, for the purpose of rendering this type of rubber capable of vulcanizing.

Furthermore, rubber is a substance, as has been stated by Reychler, which possesses the power of absorbing both sulphur dioxide and sulphuretted hydrogen gases with the greatest of ease. The absorption of these gases by rubber is more rapid than their absorption either by wood and even charcoal.

The two gases, when they are both formed at the same time, are distributed throughout the mass of rubber in such a complete fashion that the product which is formed by the reaction that takes place between the two gases and which is the potent agent in the vulcanization of rubber, namely, colloidal sulphur, is found equally distributed throughout all parts of the mass of rubber. This then means that the rubber vulcanizes uniformly.

In the next installment M. Dubosc will discuss the sulphuretted hydrogen accelerators.—The Editor.

EDITOR'S REVIEW DESK

Books **Trade Catalogs** **Articles**

THE HISTORY OF ORGANIC ACCELERATORS IN THE RUBBER INDUSTRY, by W. C. Geer and C. W. Bedford, of the B. F. Goodrich Co., Akron. Published in *Industrial and Engineering Chemistry* for April.

In 1831 Samuel Gutherie dissolved sulphur in turpentine and used the mixture as a rubber solvent. In 1832 Friedrich Ludersdorff made the observation that rubber dissolved in turpentine with 3 per cent of sulphur produced a film less tacky on the surface than that obtained without sulphur. Nathaniel Hayward patented in 1839 a mixture of raw rubber with sulphur as an ingredient. Then came the discoveries of Charles Goodyear, which mark the foundation of the rubber industry.

The growth of organic accelerators as an adjunct to the industry has been a steady process. Substances in rubber which we know as inorganic accelerators were known relatively early. Andrew Ure in 1840 described the effect of the addition of lime and magnesia for the purpose of drying rubber. Goodyear used lime and magnesia to avoid surface tackiness, and through his experiments became the discoverer not only of the effect of sulphur, temperature and time, but also of the effect of inorganic accelerators. The latter were expensive and not fully effective, but it was not until 1904 that C. O. Weber discovered the non-nitrogenous organic accelerator.

Two years later George Oenslager, a chemist of Akron, Ohio, made the discovery that aniline oil and other substances of nitrogenous nature changed the rate of vulcanization of rubber mixtures and improved the physical properties of mixtures containing lower grades of crude rubber. Oenslager's experiments involved the use of a wide variety of organic compounds as vulcanization aids. He early saw the necessity of uniformity of dispersion and worked out the principle of using a master batch of rubber containing a higher quantity of accelerator, from which the proper amount of this master batch could be weighed out and mixed into the rubber mixture for better distribution.

The discoveries in this field of the industry have been of inestimable value. Tires and other rubber goods can now be vulcanized in from one-third to one-fifth the time formerly required. The quality of rubber products has been raised and the ultimate effect has been on the consumer.

* * *

EVERYTHING IN INSULATION. 6 x 9". 207 pp, with index. Mitchell Mfg. Co., New York City.

This is the fourth edition of this handsome catalog, which fully illustrates and describes part of the insulating products which this company manufactures. Adhesives, asbestos, fibre, mica, etc. are given sections and detailed accounts of their special application are appended.

Pages 115 to 117 are devoted to a description of mineral rubber. This product has many uses. It can be used for a flux for many of the asphalites, it is the basis for the manufacture of many protective coatings and is considered one of the cheapest compounding ingredients.

Hard rubber compositions especially prepared for electrical purposes are known as ebonite. Ebonite is practically waterproof, machines easily and takes a high polish. Electrical ebonite, under tests of flash-over voltage, averaged 20,000 volts. The dielectric strength of ebonite varies from 10,000 to 38,000 per mm., depending on sample tested, shape of electrode, rate of increase, etc. Included in the catalog is an ebonite data sheet, giving various thicknesses, weights, diameters of ebonite sheets and tubes manufactured.

* * *

MOLDING RUBBER TO OUR NEEDS. What Industry and Ingenuity have Accomplished. By Duncan Keith Shaw. Published in the *Manchester Guardian Commercial* (British Malaya), February 19th.

The place that rubber occupies in civilized society is one the importance of which we are not apt to estimate because the very fact of its widespread use has made it seem commonplace. But if it so happened that through holocaust or calamity the plantations and rubber stocks of the world were eliminated man would find himself in a sorry plignt, the adjustment to which would perhaps revolutionize his entire standard of living. Motoring would cease; cycling and motorcycling would be impossible; almost the entire equipment that man has perfected to protect himself from rain and storm would be lacking. The gardener, the radio enthusiast, the surgeon would find themselves handicapped beyond belief.

It needs little imagination to vision the extent that mankind would suffer if rubber were taken from him and by this means the author of this interesting article has given a splendid account of our debt to this product. In the household, in the laboratory, in industry, rubber has gradually assumed an importance which increases year by year. And the end is not yet. Recent experience has proved that flooring and pavement manufactured from rubber is eminently desirable. Its noiselessness, cleanliness, softness to tread and durability promise a wide expansion in this field.

The use of rubber latex in the impregnation of cotton fabric and the recent discovery by which the production of very highly expanded rubber under gas is accomplished point to even wider application of rubber to the everyday needs of human life.

CLASSIFIED ADVERTISING

10 Cents a word, minimum charge $2.00, payable in advance. Address replies to box numbers, care THE RUBBER AGE, 225 Fourth Ave., New York.

WE BUY FOR SPOT CASH—Surplus and Odd Lots of Chemicals, Oils, Dyes, intermediates, solvents, gums, glues, waxes, and any item of a chemical nature. Republic Chemical Corp., 303 Pearl Street, New York, N. Y.

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Send for FREE catalog giving counts and prices on thousands of classified names of your best prospective customers—National, State and Local—Individuals, Professions, Business Concerns.
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The Market Place

WHERE TO OBTAIN

Machinery, fabrics, chemicals, compounding ingredients, crude and reclaimed rubber, consulting chemical and engineering services, etc.

ACCELERATORS—X L O and Diphenyl Guanidine.

Dovan Chemical Corp.

30 Church St. New York

ACCELERATORS — Two new accelerators: Vulcone and Di-ortho-tolylguanidine.

E. I. du Pont de Nemours & Co., Inc.

Dyestuffs Dept. Sales Div.

Wilmington, Del.

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CARBON BLACK — *Black Goose Brand*—free from grit and impurities.

Union Power Co., Inc.

Carbon Black Division

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CARBONEX — Increases strength and durability of any compound while reducing the cost.

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40 Rector St., N. Y. City

ACCELERATORS— Every lot is tested before shipment and a written guarantee of quality furnished.

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709 Sixth Ave. N. Y. City

BEAD CABLES— National Flat Woven and Pratt Patent Bead Cables.

National Standard Co.

Niles, Mich.

CHEMICALS— Solvents and accelerators. *Clay, whiting* and other compounding materials.

E. L. Bullock & Sons, Inc.

99 John St. New York City

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.

Rare Metal Products Co.

Tyler Patterson Co.

Belleville, N. J. Cleveland, Ohio

CALENDERS—Embossing, for artificial leather, oil cloth etc.

Textile-Finishing Machinery Co.

83 Exchange Place, Providence, R. I.

CHEMICALS and compounding ingredients for the rubber trade.

Harshaw, Fuller & Goodwin Co.

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ASBESTINE—Specially prepared for use in Rubber. Send for liberal working sample.

SOLE PRODUCERS

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CARBON BLACK—*Micronex* the world's standard gas black, universally known as the "King of Rubber Pigments."

Binney & Smith Co.

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CHEMICALS and compounding ingredients; Clay, Whiting, Accelerators, Mineral Rubber.

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ACCELERATORS — A19, A7, Formaldehyde Aniline, Thiocarbanalid.

The Rubber Service Laboratories Co.

611 Peoples Savings & Trust Bldg.

Akron Ohio

CARBON BLACK

nine grades for the rubber industry.

Godfrey L. Cabot, Inc.

938-942 Old South Bldg. Boston

611 Metropolitan Bldg. Akron

CHEMICALS and pigments for the rubber trade. Complete stocks carried.

Wishnick-Tumpeer Chemical Co.

Chicago Cleveland Brooklyn

BARYTES—or any other chemical ingredient can be sold by listing it in this section.

Write to-day

CARBON BLACK—*Aerfloted* Arrow Black for rubber compounding. Standard for grit-free uniformity.

J. M. Huber, Inc.

130 West 42nd St. New York

CHEMISTS read your listing in the MARKET PLACE. There is no cheaper way to reach these prospects.

Try It

THE MARKET PLACE Section Continued on Second Page Following.

MARKETS

Cottons and Fabrics

NEW YORK, April 15, 1925

New crop prospects became more and more a center of interest in the past two weeks. Excellent progress has been made with farm work throughout the belt and early planted cotton in the South Texas is in good condition. The drouth has been partially relieved by good rains in North and East Texas and in the eastern half of Oklahoma. It is expected that there will be an acreage increase of more than 5 per cent in Texas, Oklahoma and Arkansas, states which last year supplied 55 per cent of the crop.

At no time since election has the general business situation been subjected to such detailed analyses as at present. Optimistic expectations of a prolonged expansion of commercial activity are slowly being abandoned and it is realized that if business is to remain on a satisfactory basis, production must be regulated with care. There has only been a slight recession in mill activity.

From a bullish point of view, the most important factors in the situation are the increasing seriousness of the drouth conditions which continue to prevail over the greater part of the Southwest and the strength of the statistical position. Buying, however, has been restricted by the fear that should the dry areas be relieved in the near future, prices may break sharply. The doubt which exists concerning prospects in Texas and Oklahoma is encouraging farmers in other states to put as much land to cotton as possible.

Cotton consumed during March aggregated 582,674 bales of lint and 58,845 of linters, compared with 550,132 of lint and 50,598 of linters in February this year and 485,840 of lint and 41,197 of linters in March last year, the Census Bureau announced yesterday.

Stocks of cotton on March 31 were held as follows: In consuming establishments, 1,644,793 bales of lint and 157,872 of linters, compared with 1,546,216 of lint and 149,292 of linters on Feb. 28 this year and 1,503,852 of lint and 126,332 of linters on March 31 last year. In public storage and at compresses, 2,237,115 bales of lint and 62,256 of linters, compared with 3,075,140 of lint and 69,661 of linters on Feb. 28 this year and 2,095,552 of lint and 88,339 of linters on March 31 last year.

Imports for March totaled 33,955 bales, compared with 59,904 in February this year and 49,833 in March last year.

Exports for March totaled 734,697 bales, including 27,061 bales of linters, compared with 811,838, including 19,890 of linters in February this year, and 332,168, including 17,091 of linters, in March last year.

Cotton spindles active during March totaled 33,225,182, compared with 32,371,973 in March last year.

New York Cotton Prices

	Open	High	Low	Close	Close April 1
May	24.02	24.34	24.00	24.39	24.60
July	24.36	24.75	24.33	24.75	24.84
October	24.13	24.64	24.10	24.64	24.30
December	24.25	24.75	24.24	24.75	24.35
January	24.00	24.45	23.99	24.45	.....

TIRE FABRICS

Reports from Akron say that the fabric brokers in that area have done a better business this year than last. The tire manufacturers are producing almost to capacity with a total of 120 tires a day coming out of the factories. Although other cotton goods have shown easier tendencies, tire fabrics have held up well and steady. Tire fabric mills are working fairly full on a single shift basis. Prices have held unchanged. Small quick deliveries were wanted in American peeler and Egyptian styles. Tire manufacturers have not completely covered their requirements and the evidence of this is expected to be noted when distributors begin recording supplies.

CORD FABRICS				
Combed Sakellarides		Nominal		
Combed Peelar	lb.	Nominal		
Carded Peeler		.51	@	.53
Combed Egyptian uppers	lb.	.70	@	.76
Carded Egyptian uppers	lb.	.64	@	.67
SQUARE WOVEN				
17¼-ounce Egyptian uppers, combed	lb.	Nominal		
17¼-ounce Egyptian uppers, carded	lb.	.62	@	.65
17¼-ounce Sakellarides, combed	lb.	Nominal		
17¼-ounce Peeler, carded	lb.	.49	@	.51

Ducks—The enterprising buyer has found sellers ready to make concessions on volume business that would not have been considered a few weeks ago. Enameling duck continued to be the most active construction in heavy goods. The prices realized through close competition have been unsatisfactory to many first and second hands. Sales were confined to small quantities. Mills are sold up well ahead for some styles but need business on a number of constructions. The price list remained unchanged.

Burlaps—The market has been fairly active during the past two weeks. March burlap imports were better than the average so far this year, being 72,000,000 yards shipped to Eastern ports, 14,000,000 yards to Western ports and 6,000,000 yards to Canada. Considerable buying interest developed yesterday. All primary cables showed the market up.

SHEETINGS						
40-inch	2.50-yard	yd.	.16⅝	@	.16½
40-inch	2.85-yard	yd.	.14	@	.14⅛
40-inch	3.15-yard	yd.	.14¼	@	—
40-inch	3.60-yard	yd.	.11¾	@	—
40-inch	3.75-yard	yd.	.10⅝	@	.10⅞
40-inch	4.25-yard	yd.	.09¾	@	—

(Continued on Page 66)

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & EAGLES Inc.

Equitable Building, 120 Broadway, New York

SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

AMERICAN COTTON FABRIC CORPORATION

ALL THE LEADERS

Are represented in this section. Purchasing agents can rely on the concerns listed as thoroughly reliable in every way.

The Market Place

CRUDE RUBBER — All Grades. Washed - Dried - Milled. *Send us Your Inquiries.*

Gibraltar Rubber Corp.
West New York, N. J.

FABRICS—Tire fabrics of every description, Sea Island, Egyptians, Peelers.

Taylor, Armitage & Eagles, Inc.
120 Broadway New York

HEEL BURRS—with central holes; flat and cupped.

J. H. Sessions & Son
279 Riverside Ave. Bristol, Conn.

DO YOU KNOW how cheaply space in this section may be obtained?

Write for Rates

FABRICS—Stockinets, Jersey Cloth and Special Fabrics for the Rubber Industry.

U. S. Knitting Co., Inc,
Pawtucket, R. I.

MANY BIG advertisers started with little space. Spaces in this section are small in size but big in returns. Try one!

DRY KILN—for drying crude rubber and chemicals—Hunter Process.

Carrier Engineering Corporation
750 Frelinghuysen Ave. Newark, N. J.

FACTICE—Prevents blooming, makes colors fast and a smoother batch.

Stamford Rubber Supply Co.
Stamford, Conn.

LINERS — PROCESSED
For
Various Rubber Stocks

The Cleveland Liner & Mfg. Co.
5508 Maurice Ave., Cleveland, O.

FABRIC BROKER—Spots and Contracts: Tire fabrics, Enameling ducks, Tube Wrapping Tapes.

H. Frank Jones
395 Broadway New York City

GUAYULE—"Duro" Brand washed and dried ready for compounding.

Continental Rubber Co.
120 Broadway New York

MOLDS AND CORES—Tire building equipment; general machine work.

The Akron Equipment Co.
Akron, Ohio

FABRICS—Tire fabrics, Egyptian—Peeler, Karded and Combed, Cord and Square.

Cabarrus Cotton Mills
(Cannon Mills, Inc.)
55 Worth St. New York
327 S. La Salle St. Chicago

HARD RUBBER, quality hard rubber goods of every description.

Vulcanized Rubber Co.
251 Fourth Ave. New York City

MOLDS & CORES—Tire building machines; tire finishing stands; tubing machines; hydraulic presses.

The Akron Standard Mold Co.
Akron, Ohio

FABRICS—Tire fabrics—coarse builders, chafers, breakers in all grades.

New England Southern Mills
LAWRENCE & CO.
24 Thomas St. New York
Boston, Philadelphia, Chicago, St. Louis, San Francisco

YOUR NAME

in this space would be seen by Buyers, Chemists, Engineers and Executives in all rubber plants.

Write for full information

MOLDS & CORES—for automobile tires; general machine work.

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FABRICS—Tire, cords, enameling ducks, drills, sheetings, osnaburgs.

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250 West 57th St. New York City

RECLAIMED RUBBER—Uniformity, reliability, cleanliness.

Pequanoc Rubber Co.
Butler, N. J.

THE MARKET PLACE Section Continued on Second Page Following.

Cotton Markets

(Continued from Page 64)

DUCKS

Belting	lb.	.44½	@	.46
Hose	lb.	.44½	@	.46
Enameling	lb.	.44	@	.51
Shoe Ducks	lb.	.40	@	—
Single filling	lb.	.19½	@	.21⅓
Double filling	lb.	.23	@	.24

BURLAPS
(Carload Lots)

7½-ounce 40-inch		7.50	@	—
8 -ounce 40-inch		7.55	@	7.60
10 -ounce 40-inch		9.40	@	—
10½-ounce 40-inch		9.50	@	—

Reclaimed Rubber

NEW YORK, April 15, 1925

Reclaimers report continued good demand for practically all grades with special call from manufacturers of high grade tires for high tensile grades in frictions. Tire factories continue to be very busy according to reports from Akron and Trenton and this condition is expected to continue for the balance of this month and all of May. Prices of all grades remain unchanged.

Friction (Uncured)				
No. 1	lb.	.29	@	.30
No. 2	lb.	.22	@	.23
High Tensile Black				
Super-Reclaim No. 1	lb.	.17	@	.17¼
" " No. 2	lb.	.12¼	@	.12½
Shoe				
Unwashed	lb.	.09	@	.09¼
Washed	lb.	.12¼	@	.12½
Tube				
No. 1 (Floating)	lb.	.14¾	@	.15
No. 2 (Compounded)	lb.	.10	@	.10½
Tires				
Black, unwashed	lb.	.08½	@	.08¾
Black, washed	lb.	.10	@	.10¼
Dark Gray	lb.	.09½	@	.09¾
Light Gray	lb.	.11	@	.11¼
White	lb.	.14½	@	.14¾
Truck	lb.	.08½	@	.08¾
Miscellaneous				
Mechanical Blends	lb.	.05	@	.06
Red, High Grade	lb.	.13½	@	.13¾

Scrap Rubber

NEW YORK, April 15, 1925

Due to the large accumulations made during the winter months, the scrap rubber market has been very dull the past few weeks. There seem to be no immediate prospects for better conditions. Sales are being made at low figures for future deliveries.

Auto tire peelings		.00¾	@	00⅞
Standard White auto	ton	18.00	@	20.00
Mixed auto	ton	14.00	@	15.00
Bicycle tires	tons	8.00	@	10.00
Clean solid truck tires		25.00	@	26.00
Boots and shoes		.01½	@	.01⅝
Arctics, untrimmed		.00¾	@	.00⅞
Arctics, trimmed		.01⅛	@	.01¼
Inner tubes, No. 1		.04½	@	.04¾
Inner tubes, compounded		.02⅞	@	.02⅞
Inner tubes, red		.02¼	@	.02⅜
Battery jars, clean hard rubber		.01	@	.01¼
Air Brake Hose	ton	13.00	@	—
Rubber hose	ton	10.00	@	—

Crude Rubber

NEW YORK, April 15, 1925

Two weeks ago the market was very dull. There was virtually no interest among either buyers or sellers. Until the 8th the market was unsettled, with little business reported. Brisk trading featured the session on the 8th. Factories again brought April and through June. No one seemed to care to take a chance on forward shipments at the current levels, except in way of averaging costs all along the line.

During the Easter holidays London and Singapore were closed and very little was done in New York because neither sellers nor buyers cared to operate independent of London at prices so high. The New York market was virtually closed on Good Friday and Holy Saturday, only a few firms being open for business and those principally because of the trade in other lines handled along with rubber.

The market was also very dull on the 13th. Values on off grades of plantations and on Paras and Centrals were wholly nominal in the absence of any interest in the market position. London reopened on the 14th after the Easter holidays with a strong upward tendency which was accentuated by the report on stocks in that center. These stocks are down to around 15,000 tons, a reduction of approximately 1,000 tons from the previous week. The shortage of rubber is not confined to London but is also an operating factor on spot. Buyers in New York were willing to pay well for spot and nearby parcels but it was almost impossible to find sellers through the June position. Beyond July there is apparently plenty of rubber offering but no takers for it. It is thought that under present conditions and with factories needing nearby parcels almost anything can happen in the market.

The market held steady throughout the greater part of today's session, although during the final hour, dealers showed a tendency to solicit bids by offering fairly good-sized tonnages. Prices declined slightly. The lower prices, however, were not supported by either dealers or consumers and only a few contracts were placed during the day. Arrivals during the day totaled over 1,000 tons, bringing the total tonnage to date to 9,755 tons.

NEW YORK MARKET

Plantations—				
Ribbed Smoked Sheets				
Spot	.44¼	@	.44½	
May	.44⅝	@	.44⅞	
June	.44⅛	@	.44⅜	
July-Sept.	.43⅛	@	.43⅜	
Oct.-Dec.	.41⅝	@	.41⅞	
First Latex, crepe spot	.45⅛	@	.45⅜	
Amber Crepe, No. 1, spot	.44¼	@	—	
" " No. 2,	.44¼	@	—	
" " No. 3,	.43½	@	—	
Brown Crepe, Rolled	.43	@	—	
" " Clean, thin	.43½	@	—	
" " Specky	.43	@	—	
Scrap, Colombo No. 1	Nominal			
Pontianac—				
Bangermassin	Nominal			
Palembang	Nominal			
Prime Pressed	Nominal			
Sarawak	Nominal			
Paras—				
Up-river Fine	.37¾	@	—	
" Medium	.35	@	—	
" Coarse	.29¼	@	—	
Islands, fine	.35	@	—	
Madeira Fine	.37	@	—	
Acre Bolivian, fine	.37	@	—	
Cut Beni Bolivian, fine	Nominal			
Tapajos, fine	.34	@	—	
Caucho Ball—				
Upper, shipment	.33	@	—	
Centrals—				
Central, scrap, prime	.30	@	—	
Corinto, scrap	.32½	@	—	
Esmeraldo, sausage	.32½	@	—	
Guayule, w and d	.35	@	—	
Africans—				
Benguela, No. 2	Nominal			
Congo, upper, black	Nominal			
" " red	Nominal			
Kassai, Prime Red	Nominal			
Balata—				
Block, Columbia	.65	@	—	
" Cuidad	.65	@	—	
Surinam, sheet	.85	@	—	
Gutta Percha—				
Siak	.17	@	.18	
Red Macassar	3.00	@	3.20	
Chicle—				
Mexican, Yucatan	.65	@	—	

LONDON MARKET

Standard Ribbed Smoked Sheets—	
Spot	21¼d
May-June	21⅛
July- September	20⅜
Oct.-December	19¼

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—	
Spot	21¼d
May-June	20½
July-Sept.	19⅛
Oct.-Dec.	18½

J. H. LANE & CO.

Tire Fabrics Cord Fabrics

Enameling Duck Drill Sheeting

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SANITARY GOODS — Dress Shields, Reducing Garments, Sheetings, Aprons, Bathing Caps, etc.

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THERMOMETERS—Recording, controlling temperature and pressure controllers.

American Schaeffer & Budenberg Corp.

Berry & South Fifth Sts., Brooklyn

RECLAIMED RUBBER

A standardized grade for every requirement.

U. S. Rubber Reclaiming Co., Inc.

100 E. 42nd St., New York, N. Y.

"42 Years Serving the Industry Solely as Reclaimers"

SOLVENT RECOVERY EQUIPMENT

50 to 90 Per Cent Recovery

Spadone Machine Co., Inc.

15 Park Row New York

Exclusive Selling Agents for

BENZINE CONDENSATION CO.

TIRE BUILDING EQUIPMENT

MOLDS & CORES

The Akron Rubber Mold & Machine Co.

Akron, Ohio

RED OXIDE—A special grinding, guaranteed uniform in color and quality.

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114 Liberty St. New York City

SOLVENTS — Accurately refined for the rubber industry.

Hartol Products Corporation

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TRIMMERS—OVERFLOW

For Heels, Soles and Mechanical Rubber Goods.

Designers of Special Machinery

Arthur Jackson Wills Co.,

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RUBBER—Crude and scrap, all grades.

H. Muehlstein & Co.

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Akron, Chicago, Boston, Hoboken

STRIP CUTTING MACHINES

For cutting all rubber, composition and plain or impregnated fabrics.

Cameron Machine Co.

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VALVES—Tire valves, caps, insides, pressure gauges.

A. Schrader's Son, Inc.

Brooklyn, N. Y.

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White, brown and black.

Carter Bell Mfg. Co.

150 Nassau St. New York

SULPHUR—*"Tire"* Brand Superfine; *"Tube"* Brand Velvet; quality Sulphur for the rubber trade.

Stauffer Chemical Co.,

of Texas.

Scanlon Bldg. Houston, Texas

San Francisco, Cal. Chauncey, N. Y.

WHITING & PARIS WHITE

manufactured from *Genuine English Chalk* and *Cliffstone*—no adulterations.

Southwark Mfg. Co.

Camden New Jersey

RUBBER TESTING APPARATUS

Bierer-Davis Rubber Aging Apparatus; Rubber Buffing Machine for preparing tensile strength samples.

Emerson Apparatus Co.

171 Tremont St., Melrose Highlands, Mass.

TAR—PINE, RETORT, KILN

All grades for the rubber manufacturer.

Pensacola Tar and Turpentine Co.

Gull Point, Florida

ZINC OXIDES—A Z O, the Super Zinc.

American Zinc Sales Co.

P. O. Box 1428 Columbus, O.

Pierce Bldg. St. Louis

Prudence Bldg. New York

RUBBER FACTORIES

use vast quantities of raw materials and equipment. Let the industry know how well you can serve it through a listing in this section.

TECHNOLOGIST — Testing, formulae, costs, litigation, experimental work on all classes of rubber products.

Fred'k. J. Maywald, F.C.S.

5 William St., Belleville, N. J.

ZINC OXIDES — Including KADOX and "Albalith."

The New Jersey Zinc Sales Company

New York Pittsburgh Chicago

Cleveland San Francisco

CHEMICALS & COMPOUNDING INGREDIENTS

Accelerators — Colors — M.R. — Compounding Ingredients
Softeners — Vulcanizing Ingredients — Rubber Substitutes

NEW YORK, April 15, 1925—The greate r number of chemical and compounding ingredient manufacturers report a steady and satisfactory volume of business from rubber manufacturers. Only a few find it spotty and irregular. March business was exceedingly good and though it is not expected that April will equal March, this month's business will however be far from poor. Rubber plants, on the whole, have not curtailed production and reports from Akron, Trenton and New England state that a continuance of this condition is expected for several months. Prices are as follows:

ACCELERATORS

Organic			
Aldehyde ammonia, crystals	lb.	$ .93	@ .95
Aniline oil, drums	lb.	.17	@ .17½
Di-Ortho-Tolylguanidine	lb.	1.26	@ —
Diphenylguanidine	lb.	1.05	@ 1.15
Excellerex	lb.	.40	@ .45
Formaldehyde-Aniline	lb.	.40	@ .45
Hexamethylene-tetramine	lb.	.85	@ —
Paraphenylenediamine	lb.	1.30	@ 1.40
Piperidine-Piperidyldithio-Carbamate	lb.	5.00	@ —
Super-Sulphur No. 1	lb.	.50	@ —
Super-Sulphur No. 2	lb.	.18	@ .30
Tensilac, No. 39	lb.	.80	@ —
No. 40	lb.	.75	@ —
Tetramethyl—			
Thiuramdisulphide	lb.	4.50	@ 6.00
Thiocarbanilide, kegs	lb.	.26	@ .30
Triphenylguanidine	lb.	.75	@ —
Vulcone	lb.	.89	@ —
Inorganic			
Lead, sublimed blue	lb.	.10	@ .11
Lead, white	lb.	.11¼	@ —
Litharge, domestic	lb.	.12½	@ —
Lime, superfine	lb.	.01½	@ .02
Magnesia, calcined,			
light	lb.	.24	@ .25
extra light	lb.	.40	@ .45
heavy	lb.	.04½	@ .06

COLORS

Blacks			
Arrow "Aerfloted"	lb.	.07	@ .11
Bone Black	lb.	.05½	@ .09
Carbon "	lb.	.06½	@ .11
Drop "	lb.	.06	@ .14
Ivory "	lb.	.12	@ .45
Lamp "	lb.	.12	@ .40
Micronex	lb.	.07	@ .12
Thermatomic carbon	lb.	.04	@ .08
Blues			
Cobalt	lb.	.21	@ .26
Prussian	lb.	.35	@ .37
Ultramarine	lb.	.08	@ .35
Browns			
Iron oxide	lb.	.02¼	@ .06¼
Sienna, Italian	lb.	.04	@ .14
Umber, Turkey	lb.	.04	@ .06
Vandyke, domestic	lb.	.04	@ .04½
Greens			
Chrome, light	lb.	.27	@ .29
medium	lb.	.29	@ .30
dark	lb.	.31	@ .34
Commercial	lb.	.10	@ .10½
Reds			
Antimony crimson, 15/17 F.S.	lb.	.45	@ .50
sulphur free	lb.	.45	@ .60
golden, 15/17 F.S.	lb.	.16	@ .19
calcium and sulphur free	lb.	.40	@ —
red sulph. 15-17 F.S.	lb.	.16	@ .20
Indian English	lb.	.08	@ .10
Oximony	lb.	.13½	@ —
Para toner	lb.	.90	@ 1.00
commercial	lb.	.14	@ .15
Red oxide, reduced	lb.	.04	@ .12
pure	lb.	.12	@ .14
Toluidine toner	lb.	1.80	@ 2.05
Venetian red	lb.	.01½	@ .05
Vermillion, quicksilver, English	lb.	1.40	@ 1.50
domestic	lb.	.15	@ .25
Whites			
Albalith	lb.	.06¾	@ .06⅝
Aluminum bronze		.60	@ 1.25
Lithopone, Akcolith	lb.	.06¼	@ .06¾
Lithopone Azolith	lb.	.06½	@ .06⅝
Zinc Oxide—American Process XX red	lb.	.07¾	@ .08¼
Kadox, black label, bags, cars		.10⅝	@ .11¼
blue " " "		.09⅝	@ .10⅛
red " " "		.08⅝	@ .09⅛
American Azo: ZZZ (lead free)	lb.	.07¾	@ .08¼
ZZ (under 5% leaded)	lb.	.07	@ .07½
Z (8-10% leaded)	lb.	.06¾	@ .07¼
Zinc Oxide—French Process White seal	lb.	.12	@ —
Green seal	lb.	.10¾	@ —
Red seal	lb.	.09¾	@ —
Yellows			
Chrome, light		.18½	@ .19
dark and medium	lb.	.18½	@ .19
Cadmium Sulphide	lb.	2.00	@ 2.50
Ocher, French medium	lb.	.03	@ .03½
domestic	lb.	.01½	@ .02½

COMPOUNDING INGREDIENTS

Aluminum Flake	ton	21.85	@24.50
hydrate light	lb.	.17	@ .18
Ammonia carbonate	lb.	.13½	@ .14½
Asbestine	ton	18.00	@20.00
Barium carbonate	ton	54.00	@56.00
Barium Dust	lb.	.05	@ .06
Barytes southern off-color,	ton	15.00	@18.00
Western prime white	ton	22.00	@23.00
imported	ton	28.00	@38.00
Basofor	lb.	.04½	@ —
Blanc fixe, dry f.o.b. works	lb.	.04	@ .04¼
Carrara filler	lb.	.01¾	@ .02
Chalk, precipitated, extra light	lb.	.04¼	@ .05
heavy	lb.	.03¼	@ .04
Clay, China, domestic	ton	15.00	@25.00
Dixie	ton	20.00	@35.00
Blue Ridge	ton	9.00	@ —
Langford	ton	12.00	@22.00
Glues, extra white	lb.	.21	@ .29
medium white	lb.	.19	@ .25
cabinet	lb.	.16	@ .25
cabinet low grade	lb.	.15	@ .18
common bone	lb.	.11	@ .14
Graphite flake, bbls.	lb.	.06½	@ .12
Lump	lb.	.04	@ .07
Infusorial earth, powdered	ton	23.00	@25.00
bolted	ton	20.00	@ —
Liquid latex	gal.	1.75	@ 1.85
Magnesia, carbonate	lb.	.08½	@ .09
Mica, powdered	ton	65.00	@80.00
Rotton Stone (powdered)	lb.	.05	@ .07
Soapstone, powdered	ton	15.00	@22.00
Starch, powdered	cwt.	4.07	@ 4.55
Talc, domestic	ton	16.00	@18.00
French	ton	18.00	@22.00
French, high grade	ton	38.00	@45.00
Italian	ton	45.00	@55.00
Terra Alba	cwt.	1.25	@ 2.00
Tripoli, white	lb.	.02	@ .02¼
Whiting, commercial	cwt.	1.00	@ 1.15
gilder's bolted	cwt.	1.25	@ 1.35
English cliffstone	cwt.	1.50	@ —
Paris white American	cwt.	1.25	@ 1.50
Quaker	ton	13.00	@15.00
Sussex	ton	8.00	@10.00
Wood pulp XXX	ton	35.00	@ —
" " X	ton	25.00	@ —

MINERAL RUBBER

Genasco (factory)	ton	50.00	@52.00
Granulated M.R.	ton	35.00	@45.00
Hydrocarbon, Hard	ton	29.00	@35.00
Hydrocarbon, Soft	ton	29.00	@35.00
320/340 M.P. hydrocarbon (e. l. factory)	ton	47.00	@52.00
300/310 M.P. hydro-carbon (e. l. factory)	ton	42.00	@47.00
Synpro, granulated, M.R. (factory)	ton	55.00	@70.00

SOFTENERS

Acids			
Acetic, 28%	cwt.	3.12	@ 3.37
Cresylic, 97%	gal.	.62	@ .64
95%		.58	@ .60
Muriatic, 20%	cwt.	.90	@ 1.00
Nitric, 36 degrees	cwt.	4.25	@ 4.50
Sulphuric, 60 degrees	ton	9.50	@10.50
66 degrees	ton	14.00	@15.00
Tartaric, crystals	lb.	.29	@ —
Alkalies			
Caustic soda, 76%	cwt.	3.20	@ 3.50
Soda ash, 58% C.L.	cwt.	1.43	@ 1.45½
Oils			
Castor, No. 3, bbls.	lb.	.16	@ —
Chinawood, bbls.	lb.	.13	@ —
Corn, crude, bbls.	lb.	.12½	@ —
refined	lb.	.13½	@ —
Cottonseed, crude		.10	@ —
Glycerine C.P. drums	lb.	.19	@ .19½
Linseed, Raw C.L. bbl.	gal.	1.00	@ —
Palm, Niger	lb.	.08⅞	@ —
Lagos	lb.	.09⅛	@ .09¼
Peanut, domestic, crude	lb.	.13	@ —
Petrolatum, white		.12½	@ .13
amber		.03⅞	@ .04
dark amber	lb.	.03⅝	@ .03¾
Pine, steam distilled	lb.	.65	@ .66
Rapeseed, refined	gal.	.97	@ —
blown	gal.	1.05	@ —
Rosin, first rectified	gal.	.51	@ .52
second rectified	gal.	.53	@ .54
Soya Bean, crude		.13¼	@ .13½
Tar, commercial	gal.	.30	@ .32
Resins and Pitches			
Parra M.R.	lb.	.06	@ .07
Tar Retort	bbl.	13.50	@14.00
kiln burned	bbl.	13.50	@ —
Pitch, Burgundy	lb.	.05	@ .06
coal tar	gal.	.05½	@ .06
pine	bbl.	6.00	@ 6.50
Rosin, grade K	bbl.	8.80	@ —
Shellac, Superfine, orange	lb.	.63	@ .67
Solvents			
Alcohol, denatured, No. 1 bbls.	gal.	.57½	@ .61
Benzol, 90%	gal.	.23	@ —
pure		.24	@ .28
Carbon bisulphide	lb.	.06	@ .07
tetrachloride	lb.	.06¾	@ .07½
Dimethylaniline	lb.	.33	@ .36
Motor gasoline, steel bbls.	gal.	.20	@ —
Naptha, V. M. & P.	gal.	.17¾	@ —
Toluene	gal.	.26	@ —
Turpentine, spirits	gal.	.94½	@ .95½
wood	gal.	.83	@ .85
Waxes			
Bayberry	lb.	.21	@ .22
Beeswax	lb.	.55	@ .65
Carnauba, No. 1	lb.	.36	@ .39
Ceresin, white	lb.	.10	@ .11
Montan, crude	lb.	.06	@ .06½
Ozokerite, black	lb.	.24	@ .25
green	lb.	.26	@ .30
Paraffine White, A.M.P.	lb.	.04⅞	@ .05
Yellow A.M.P.	lb.	.05⅛	@ .05¼
Sweet wax	lb.	.12	@ —

SUBSTITUTES

Black		.08	@ .14
White	lb.	.09	@ .16
Brown	lb.	.10	@ .14
Brown factice	lb.	.09	@ .18
White factice	lb.	.09	@ .16

VULCANIZING INGREDIENTS

Black hyposulphite	lb.	.18	@ .20
Sulphur Chloride (drums)	lb.	.03½	@ .06
Sulphur flour			
Commercial bags	cwt.	1.35	@ 1.70
" bbls.	cwt.	1.70	@ —
Superfine, bags	cwt.	2.20	@ 2.50
" bbls.	cwt.	2.60	@ 2.90
100% pure, refined, bags	cwt.	2.35	@ 2.65
bbls.	cwt.	2.60	@ 2.90

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of THE RUBBER AGE published semi-monthly at Highland, New York for April 1, 1925.

County of New York
State of New York } ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Peter P. Pinto, who, having been duly sworn according to law, deposes and says that he is the Business Manager of THE RUBBER AGE and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher Gardner Publishing Company, Inc., Highland, New York; Editor G. H. Trimingham, 225 Fourth Avenue, New York City; Managing Editor None; Business Manager Peter P. Pinto, 225 Fourth Avenue, New York City.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

Gardner Publishing Company, Inc.; Lester D. Gardner, 225 Fourth Ave., New York City; Earl D. Osborn, 225 Fourth Ave., New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are:

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4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Peter P. Pinto, Business Manager.

Sworn to and subscribed before me this 13th day of March 1925.

[Seal.] MICHAEL F. PINTO

(My commission expires Oct. 9, 1925.)

TECHNICAL ABSTRACTS

Mechanical **Chemical** **Physical**

Printing on India Rubber

In British Patent No. 204,080, there is described a method of applying a light sensitive medium to the surface of pale crepe rubber and the film is then exposed behind a photographic negative. The image is developed and fixed, and the surface is coated with a film of transparent rubber latex. The whole is then vulcanized as by the Peachey process.

In British Patent No. 204,668 there is described a process wherein suitable inks, such as are prepared from an aniline color with a small amount of fat and naphtha, are employed. The inks may also be made from a water soluble pigment and latex. These inks are then applied to the surface of the pale crepe rubber with the aid of a printing press, in sufficient quantity to penetrate the sheet and under sufficient pressure to give well defined markings. Unintentional spreading of the ink is prevented by prompt cold vulcanizing, for example by the Peachey process.

Compositions with Rubber Latex

Rubber latex, preferably with a high rubber content, for example, fifty per cent, is mixed with compounding ingredients by first introducing any gum, glue, soap or similar substance desired, and then churning with an aqueous suspension of the mineral ingredients, for example, sulphur, antimony sulphide, French chalk or zinc oxide, which have previously been formed into a sludge in a wet grinding mill. The mixture is churned with simultaneous injection of ammonia, if desired, until it assumes a creamy consistency, after which a dilute solution of a coagulant is added. The coagulum may be washed with a weak alkaline solution and is then dried. The product may be sheeted and vulcanized for floor covering or may be dissolved in a suitable medium for use in varnish or paint. If it is desired to obtain a less tough and more plastic coagulum, the latex prior to use is heated under pressure to a temperature of 100 to 140 degrees in the presence of an anti-coagulant and, if desired, also of a rubber solvent. British Patent No. 212,597.

The Aging of Rubber

The aging of rubber is one of the oldest problems in the rubber industry. The lack of resistance in rubber to variations in temperature and to exposure to the rays of sunlight has been the principal difficulty in rubber manufacture right from the beginning. The discovery of vulcanization removed the first difficulty but this has done more in complicating the problem by introducing the element of aging.

The analysis of samples of rubber which have been subject to aging have shown that the rubber has been subjected in part to a high degree of oxidation, and the acceleration of this oxidation action by light is a fact that was quickly recognized. The degree of the speed of oxidation of the crude rubber and of the vulcanized rubber as well has shown that the reaction is of the nature of an auto-catalysis. The speed of oxidation is considerably increased by the rise in temperature. This is the basis of a good many of the so-called accelerated aging tests in which the rubber sample is kept in a chamber at a certain definite and uniform temperature while hot air is being circulated through it in order to assure uniformity of oxidation.

Sometimes the extent of the aging is determined by the variations in the weight of the rubber sample, but it is more general to determine this phenomena by measuring some physical property of the rubber. For example, resistance to tension may be chosen. It is possible then to make some conclusion as to the length of life the rubber will have in actual service.

Due to the effect they may have on the physical properties of vulcanized rubber, the organic accelerators employed in vulcanizing may have a serious effect on the speed of aging. As in many cases the best vulcanization is obtained with a low coefficient, and as the effect of the increase in the duration of the vulcanization is not disadvantageous as far as the physical properties of the vulcanized rubber are concerned, it follows that the presence of organic accelerators is generally advantageous. On the other hand, certain mineral ingredients found in the rubber mixture act as oxidation catalyzers, and hence their use must be carefully avoided in the manufacture of rubber. The rubber mixtures should be examined to determine if they are present.

Thus certain ingredients that are found in the rubber mixture, because of their intrinsic physical properties, improve the aging of the rubber. By using the proper kind of organic coloring matters a certain degree of protection is secured against the action of light. *Le Caoutchouc et La Gutta-percha,* 1925, page 12429.

Hard Rubber Compositions

Liquid or soluble, fusible phenol resins are mixed, by prolonged working with a smaller quantity of raw rubber on cold rolls or in cooled mixing machines, the temperature being maintained at about ten degrees. On heating slowly in molds to 180 degrees the pheno, resins become insoluble and the product has the appearance of a highly elastic, light colored vulcanite. The rubber in such compositions can be vulcanized if desired either by incorporating a small percentage or sulphur in the original mixture or by subsequent surface-vulcanization with sulphur chloride. By the incorporation of pigments and mineral fillers the color and the specific gravity can be adjusted as desired, for example for golf balls or billiard balls. British Patent No. 214,124.

Accelerating Vulcanization

It is known that the vulcanization of india rubber by the Peachey process may be accelerated by adding para nitrosodimethylaniline or its homologues and heating, but this substance is liable to be injurious in handling it. It is now found that this disadvantage may be avoided by using a compound of one molecular proportion of para nitrosodimethylaniline with two proportions of beta naphthol. This compound is less inflammable than para nitrosodimethylaniline, and may be used, transported, and stored as a finely divided powder. The product can be obtained by grinding together the nitroso base and beta naphthol in the proportions mentioned. The compound need not be prepared before use, but the ingredients may be mixed with the rubber. Equivalent nitroso-alkyl-arylamines may also be employed, for example nitroso-diethylaninline and nitroso-monoalkyl-ortho-toluidine. British Patent No. 218,854.

Organic Accelerators

H. P. Stevens in the Bulletin of the Rubber Growers' Association tells about certain experiments performed in the vulcanization of rubber with organic accelerators. Mixtures of smoked sheet rubber, one hundred parts, sulphur two parts, zinc oxide two and twelve parts, and zinc diethyldithio carbamate, one part, when vulcanized for a period of five, ten or fifteen minutes at a temperature of 131 or 138 degrees C exhibited satisfactory and comparable physical properties irrespective of variations in the conditions. Relative to control mixtures of the same rubber—one hundred parts, with sulphur—eights parts, and zinc oxide—two or twelve parts—, vulcanized for 175 minutes at a temperature of 138 degrees C, the accelerated mixtures showed markedly superior behaviour in a rapid ageing test.